

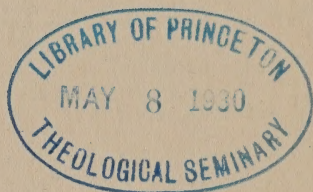
**MIND AND
BEHAVIOR**

**HERRICK • HUMPHREY
JASTROW • ALLPORT
BURTT**



**MAN AND
HIS WORLD
VOLUME THREE**

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MIND AND BEHAVIOR



MAN AND HIS WORLD

Northwestern University Essays in Contemporary Thought

Edited by

BAKER BROWNELL

Volume I

A PREFACE TO THE UNIVERSE

Volume II

THE WORLD MECHANISM

Volume III

MIND AND BEHAVIOR

Volume IV

MAKING MANKIND

Volume V

SOCIETY TODAY

Volume VI

SOCIETY TOMORROW

Volume VII

PROBLEMS OF CIVILIZATION

Volume VIII

CIVILIZATION AND ENJOYMENT

Volume IX

ART AND THE WORTH WHILE

Volume X

FIVE ARTS

Volume XI

RELIGIOUS LIFE

Volume XII

THE WORLD MAN LIVES IN

DECORATIONS BY ERVINE METZL

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MAN AND HIS WORLD

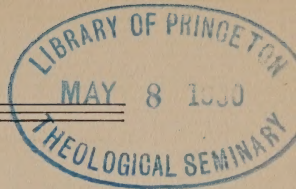
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MIND AND BEHAVIOR

BY

C. JUDSON HERRICK

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MAN AND HIS WORLD

VOLUME THREE

EDITED BY BAKER BROWNELL

NEW YORK

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MIND AND BEHAVIOR



THAT curious accessory of living called the mind has never been explained. It hides away in the smoke of its own verbalities, and the explainer of man's world cannot explain itself. Though a healthy life might better be unconscious of a mind, just as it always is unconscious of a stomach or a liver, still men dwell on it. They turn on it over and over in self-devouring curiosity; they sneak in from behind upon it by the introspective method — like a monkey grabbing images behind a mirror — or they butt boldly at it with behaviorism — and break the mirror — with the motto, "Only results count"; or try other methods; but their success is not outstanding. They train the mind, and they feed it strange odds and ends, and they fear it; they store it full of silage for the long winters of the future, but they do not get their hands upon it and they know not what it is.

For mind dwells in them like a ghost from another realm, strangely anomalous to the scientific temperament, and what to do with it embarrasses them con-

siderably. Its symbols catch a glitter of significance and then fade again; its orders seem to be the orders of reality, but unsubstantial and without conviction. Men isolate the mind for study and promptly it evaporates. They departmentalize the concrete whole of living into topographic areas, and fail. For mind is not an area or constituent that can be set apart; and here man's inveterate abstracting tendency plays him false. Like life, the mind cannot be isolated for experiment, it cannot be picked out. Mind is buried deeply in the concrete whole of things, and only as such can it be studied.

This mutual relativity of mind (whatever it may be) and other things is not far from the psychology of the configurationist, who, as Doctor Humphrey says, repudiates the atomism of analytic science and insists that the patterned whole of man, and the world, no doubt, is the reality to consider. And the behaviorist, too, rough-neck of psychology as he is, bases his observations on the wholeness of man's living, from morning to night and from night to morning. Though his method is pugnaciously limited to objective observation and measurable experiment, while the configurationist is less afraid of logical theses and conventions, he still is not atomic in his method.

To the functionalist, says Professor Herrick, mind is a function of the body, and though for the func-

tionalist as well as any other who follows scientific method, the world and life and mind must be treated mechanistically, thoughts and emotions may still control behavior. Thus does the child of behaviorism — logically the child at least — repudiate its parent, and theories of emergence — of life from matter and of mind from life — may not be inconsistent. It moves on to resolutions of the problem that for the behaviorist, who follows rigidly the scientific method, are most repugnant.

In his action patterns, says Doctor Jastrow, a man is many animals. He is a rodent and a pup; he is a monkey and a poor fish. Animals indeed, in character if not genetically, are dispersed segments of human nature, and man's thinking is bound to incorporate somewhat of their nature in its process. Wisdom, says Doctor Jastrow, consists in the mutual adjustment of thinking and feeling. And the function of the wise mind, it would seem from this, is the co-ordination and synthesis of all the significant factors of living into one organic whole. But to right thinking there are many impediments. Some of them, says Doctor Jastrow, are, strong feeling, fantasy, dreaming, delusion, complexes, vagaries, "thobbing," personalism, conformity. Clearly these criticisms are normative appliances, in many cases, designed to fix a chosen standard of right thought; for presumably there is no right thinking in the absolute. Some thought is

social; some is individual; all thinking is only right by relativity.

The common man probably knows best what is good for him, says Professor Allport, and this socially may be taken as a democratic norm of thought. There are many norms, and many men, and many, many thoughts. No science will catalogue them all. But right thinking, socially or individually, will usually be the thinking that is consistent with success in getting what man needs.

The gulf between mind and matter persists, however, and no one knows what is there. With Professor Burt's article the first three volumes of the series, dealing primarily with the material aspect of the world, come to a close, and the transition, so far as that is possible, from the world of matter to the world of value is begun. This treacherous problem, largely of man's own making, falls to philosophy to answer in whatever way it can. For philosophy in this instance is a centripetal influence, and the fragments of man's world, thrown far by the centrifugal thinking of his past, must somehow be assembled. Value and matter, mechanism and spirit, body and mind; the dualities have grown; the segregations have become more strict with the growth of scientific method and technique. To avoid the wreck and trouble ensuant from such divisions, Whitehead with his idea of organism as the basic reality, and Morgan and

others with their emergent evolution, have given much thought. To the latter, in particular, Professor Burt turns for the solution. Reality evolves, says Morgan; from space-time emerges matter, from matter emerges life, from life emerges mind, and from mind emerges God. It is a long story, and there will be much change before the end.

The next volume (IV) of the series begins with man as a social and historical being. His values more and more will be considered. The purely objective world of science will be gradually retired, and the world in its practical bearing on man's interests will come in. The world from the point of view of practical value will fill the next five volumes. Society will be its key.—B.B.



BEHAVIOR AND
MECHANISM

C. J. Herrick

THE modern period of biology began with the recognition that vital processes are natural events, not acts of the caprice of some supernatural spirit or ghostly presence. Today, qualified biologists, with very few exceptions, accept this doctrine without reserve, and devote themselves to the task of finding out just how the activities of living bodies are related with those of inorganic nature, from which we derive our sustenance and our vital energies.

This does not mean that the behavior of living bodies is just like that of dead machines; but it does mean that everything that goes on in a living body is related in an orderly way, that is, in causal sequences, with the events of the world in which that body lives. The laws of biology are not those of physics and chemistry, but they are congruous with them, and the rules of these relationships are rapidly being discovered and recorded.

In psychology the "modern period" in the sense

just described has not yet arrived. There is no agreement among professional psychologists as to what the method or the content of their science is. The fields which they are cultivating have been explored for a long time, first by common-sense observation and later by elaborate refinements of technical procedures and instrumentation. But there are wide differences of opinion regarding the boundaries of the field that can properly be called psychology, and the most fruitful methods of approach to its problems.

We are all interested in human behavior, because this topic includes the ways in which we make our living and live the life that we have made. It may be profitable, before going any further with this topic, to survey briefly some of the ways in which psychologists have worked at the problems of human behavior and human adjustment.

First, there was a long pre-psychological period, a period of mythology. Primitive man had a very incomplete knowledge of the laws of Nature, and many events that came within his experiences seemed quite lawless or capricious. Everything that he did not understand was accounted for as the arbitrary act of some fetish, spirit, god, or demon. His whole mental life, including his ideas, feelings, impulses, imaginings, and dreams, was unexplained, so it was supposed to be due to the indwelling of a spirit

(psyche or soul) separate from the body and controlling it.

This led to a period when a theoretical psychology was developed as a part of metaphysics. The theories of mind were elaborated within a general metaphysical system, without paying much attention to troublesome facts.

Within the past century a valid science of introspective psychology was slowly extricated from the entanglements of metaphysics. Mental experiences were critically examined and codified. Then experiments were made in psychological laboratories, and some rules or laws of mental processes were discovered. Logic, a much older discipline than psychology, had done the same thing with the end results of thinking, telling how valid thinking is carried on in terms of syllogisms and the like. But experimental psychology struck deeper, and tried to reveal the nature of mental processes as going concerns.

Parallel with experimental psychology, the science of physiological psychology emerged. This was a serious attempt to correlate accurately observed mental processes with bodily processes, and with outside events which serve as stimuli and set off the bodily and mental activities.

Experimental and physiological psychology, as laboratory sciences, have grown up within the mem-

ory of men now living. Within the short span of one lifetime we see almost the whole course of development of psychology as a natural science. The activity has been prodigious, and the recorded observations and experiments make a very large library.

The last three decades of this period have seen the growth of an approach to psychology from a new angle. Dissatisfaction with the results of the introspective study of mental processes led this group to cut loose entirely from the older traditions and investigate the behavior of animals and men quite apart from any consciousness that might accompany it. Thus arose the newer objective, or behavioristic, psychology.

This field, too, has been very actively cultivated. The methods are those of physiology. The results have included very important additions to our knowledge of the learning process, of the ways in which practical adjustments to new situations are made, of emotion and its mechanisms, and many other matters in the border territory between physiology and psychology.

This objective study of behavior has so far contributed little to our knowledge of the higher mental life of man, the field of reasoning, imagination, appreciation, and our spiritual exercises and values in general. Here the introspectionists hold their ground,

not without many controversies, which often yield more heat than light.

Still more recently the Gestalt psychology has come to the fore, putting the emphasis on the total situation within which behavior is carried on and consciousness works. The separate act, whether of body or mind, can be understood only in its setting, only in relation with everything else that is going on. This is a healthy movement, perhaps chiefly because it tends to counteract a prevailing over-simplification of psychological problems.

Gestalt is in some respects a counterpart of relativity in physics. At present it seems to need more precise formulation of its problems. To put it on a sound scientific basis it will be necessary to explain the mechanisms that are working in the total situation when a particular configuration of behavior or consciousness emerges from the general background of the situation in which it operates. This is a very difficult thing to do, for these total situations are always extremely complex, and their analysis cannot be hoped for by the application of any one of the various methods of psychological study that have just been mentioned. But it is not impossible, by attack from all of these sides, to arrive at a practicable working plan.

No attempt can be made here to summarize the great mass of facts and theories which these various

schools of psychological study have brought forth. That in itself would require many volumes. Each method of attack has yielded much of value. But their results have not as yet been very well coordinated.

There is so much difference of opinion as to what psychology is, and what must be done to develop psychology as a natural science, that it may be well at this point to raise some more general questions. What is nature? What is the scientific method? What is a natural science? In the study of human nature, how far can we go with the methods of natural science?

The human body has come to be what it is by a natural process of evolution that has taken many millions of years. The behavior-patterns of this body have, of course, grown up parallel with the development of the bodily mechanisms that behave. This body does many things that no other animal body can do. It clears land of forests and plants it to wheat. It builds machines to plant and harvest the wheat. It grinds the wheat and makes bread of the flour. It markets the wheat, the flour, and the bread by complicated systems of transportation, finance, and speculation. It creates works of art and enjoys them. It

develops ideals of present and future conduct and character.

There are mental factors in all of these distinctively human activities, and these factors are inextricably interwoven with all problems of human behavior. Can we write a natural history of this mental aspect of human conduct, as well as of the physical and physiological aspects?

A man engages in agriculture, or manufacturing, or commerce, because in this way he can satisfy some of his needs or wants. His needs are very personal; his wants may be known to himself alone. But his conduct in satisfying these needs and wants is open to general inspection. This behavior we can study scientifically, much as we study the behavior of other animals. But what mentality there is back of this behavior we can get at only indirectly, by comparing the things that he does and says with what we do and say, and with what mental experiences we have while we are doing it.

This is not a very satisfactory basis for a science of psychology. But it is the best we have, so we shall have to put up with it and do the best we can with it.

This, indeed, is possible only if we can connect the mental life with the physiological life, and also with the physical environment with which both body and mind must be adjusted in order to keep on working effectively. To be of any use to us in this enterprise,

the connection between mind, body and environment must be a real one, a connection of causal interrelationship, such as we find to prevail between the things and events of the physical world outside, between earth and sun, sea and land, vegetation and climate, money and purchasing power, supply and demand of commodities.

To keep our discussion within manageable limits, let us state at the outset that psychology, as the term is here used, includes our conscious experience (that is, our awareness) in its entirety, and everything else that may help us to understand this consciousness. The psychologist, then, may use introspection; he may study the bodily mechanisms employed in thinking, fearing, getting angry, and the like; he is interested in the whole field of animal and human behavior as the organic background of mental life, and as part of its instrumentation; and he must study all of these things in relation to the physical, biological, and social environment within which they have grown up and are now operating.

This is an ambitious program. Most psychologists at present seem to feel that it is too big for them. They are right, of course. No man can cultivate so wide and so diversified a field. It must be divided up into separate farms. And yet no one of these cultivators can get along without some commerce with the others. The science of psychology as a whole must

in the end include the products of the labors of all of them.

Now, coming back to our more general questions, nature, as we know it in science, has been defined as the sum total of human experience. Natural science cannot deal with things of which nobody has ever had any experience, though it can recombine the experienced elements in original patterns, as in imagination and hypothesis. As fast as we get more experience, our science enlarges.

The application of the scientific method to the study of natural phenomena involves, first, finding out as much as possible about natural things, how they are constructed and how they work. They operate according to rule; and when we have learned these rules, we have formulated the laws of nature. Second, the prediction of future events is possible, as soon as we have learned the uniformities of natural processes, that is, the laws of nature. Third, some measure of control of the future course of events is possible when the two steps just mentioned have been taken.

When we know the laws in accordance with which natural events take place, we can sometimes play one

set of forces against another, and so direct their further courses as we wish. We can make wind and water drive our mills, steam run our railroads, and sunlight take our photographs. Control of natural forces is the final achievement of science.

Now, in learning to control the forces of nature, we do not upset any natural laws, but we learn to conform our own behavior to these laws, so as to direct the course of events to our own advantage. We cannot change the laws of gravitation, but we can make water run up hill by opposing a stronger force to gravity.

In achieving this control of nature, we have learned that there are many different kinds of mechanisms, and that energy is manifested in as many forms as there are patterns of mechanism through which it works. Mechanical work, which we measure in foot-pounds or horsepower, is movements of masses of matter against resistance. Heat, which we measure in calories, is molecular movement. Light, electricity, and magnetism are movements of electrons. And for each of these there is a definite unit of measurement. Diverse as these natural processes are, there is a well known quantitative relation between them, and all are manifestations of energy in lawful patterns. They are mutually convertible into energy, which is the common denominator of all of them.

It is clear, therefore, that natural mechanisms are

extremely diverse, and the different kinds of things that go on in nature are the dynamic expressions of the operations of these diverse mechanisms. We cannot measure them all with the same yardstick, but all of them can be measured somehow. All natural phenomena are interrelated, and the behavior of living bodies fits into this natural scheme in orderly fashion.

The laws of these interrelationships can often be discovered long in advance of our knowledge of the exact mechanisms involved. Thus, we know some of the laws of gravitation, we can measure the force of gravity very accurately, and we can use it in running a water mill, even though we are quite ignorant of what the apparatus is that is working. So also many vital processes are known to follow the same rules as the inorganic (laws of hydraulics, osmosis, chemical affinity, electrical polarization, etc.). Other vital processes are different from anything known in the inorganic world, though some of these can be analyzed into simpler inorganic processes. And yet we do not know just what life is.

The energy expended by a living body can be quite accurately measured. It is known, for instance, that the human body gets the energy necessary to keep it going from its food, and that the average body each day requires food equivalent to 2,000 calories, that is, this food, if burned, would yield heat

enough to raise the temperature of 2,000 kilograms (about 500 gallons) of water one degree.

The physiologist regards the living body as a machine, and it is his job to learn how it works. But it is not the same kind of a machine as his motor car. It is made differently and it behaves differently. Many of the laws of natural dead mechanisms (river systems and the like) and of man made machines reappear in living bodies, but they are combined in new patterns never seen in dead machines.

The reason why animal behavior in general, and especially human behavior, seems so lawless and is so hard to predict and control, is simply that we have not yet learned enough about the laws of biology. As fast as these laws are discovered, the behavior embraced by them is seen to follow in causal sequence, like other natural events.

The living machine is so complex, and it behaves in ways so different from those of dead mechanisms, that our knowledge of it is still very fragmentary. So many of the vital processes have, however, been analyzed into specific combinations of well known physical and chemical ways of behaving, that most biologists assume that all the complex activities of

living things are combinations of simpler natural processes. All other views hitherto suggested lead off into mysticism, and seem to close the door to further scientific study of life. We prefer to continue to observe and experiment, in the hope of learning how to control the conditions of life more intelligently and to lead more productive and satisfying careers ourselves.

Mechanistic biology does not claim that all animal behavior can be expressed in the formulas of inorganic physics and chemistry. It does believe that all living phenomena belong to the same natural order as these, and are causally related with them.

What a machine does depends on how it is constructed and the situation in which it operates. A locomotive is no good without its track. An airplane dispenses with the track, or any roadbed, because it is differently built. A living bird can do some things that an airplane cannot (lay and hatch a clutch of eggs, for instance) because it is built differently. Some vital functions are unique, and are never seen except in living bodies. They are nevertheless just as truly mechanistic, that is, causally related, as are those of a gyroscope or a wireless telephone, which also are unique.

Accordingly, our knowledge of animal behavior will be incomplete, and our control of animal behavior will be imperfect, as long as we are in igno-

rance of the exact structure that is behaving. This is well illustrated by recent progress in genetics, where breeding experiments and the most recondite microscopic study of chromosomes have worked hand in hand, so that now we know how to control some practical procedures of animal and plant breeding. Scientific medical practice gives numberless illustrations of the same thing.

Because living bodies are machines working in accordance with natural laws, we can modify or control their behavior, to some degree, as soon as our biological knowledge is adequate. Some of this knowledge has been gained by practical experience, and some by very technical scientific procedures.

A horse can be trained to the harness or saddle. Faster race horses or heavier draft horses may be bred from inferior stock by well known rules of heredity. Special breeds of men can be produced in the same way, any time that a sufficient number of people want to try it. We know perfectly well how to do it, but it will probably be a long time before the experiment will actually be tried on a large scale with adequate scientific technique.

Most of the mechanisms of the human body are not fundamentally different from those of other animals; but some of them, especially in the brain, are different and peculiar to mankind. Human biology, accordingly, is a valid and practicable science just in

proportion as the mechanisms of our bodies and of our social organization can be understood and human behavior interpreted as the operation of these mechanisms. Part of this program is already far advanced.

As long as we are in good health, we know how to use our bodies practically in earning our living and getting on in the world, without knowing much about these scientific matters, just as one may learn to run his motor car without bothering himself with the engineering principles of its design and construction. And yet, since mechanics and doctors are not always handy when we need them, we find that we get on better, the more we know about the construction, operation, and care of our cars and of our own bodies.

Human behavior, however, is complicated by the fact that we know what we are about, while we are behaving, and we have no evidence that a river or an automobile does this. This awareness of what we are doing is a very troublesome feature of human conduct; and the science of human behavior would be so much simpler, if we could leave this factor out of the reckoning, that many biologists and even some

psychologists are tempted to ignore it altogether, and say that the mechanisms of human life would run along just the same if we were unconscious automatons.

The chief trouble with this idea is that it does not seem to be true. In practice, our conscious experiences, our emotions, our sensations, our memories, our thoughts, our hopes and fears, do play real parts in shaping our conduct. It is popularly believed that this is so, and this belief is scientifically sound. No verbal hocus-pocus, no metaphysical dialectic, no appeals to disembodied spirits or other mystical explanations can nullify our practical experience that our thoughts and our emotions do control our conduct, to some extent at least.

But the attempt to articulate the conscious components of human behavior with the natural system of causally related objective phenomena is beset with very special difficulties, and many naturalists and philosophers have given up the attempt to do so. They regard consciousness as belonging to a spiritual realm incommensurable with natural causal sequences and hence independent of our formulations of the laws of nature. This hypothesis does not seem to fit the facts of our experience; for, as we have seen, our conscious life and our physiological life do operate in unison and in causal interrelationship. Changes in the body (fatigue, intoxications, etc.)

do affect the mind, and the mind does act through the body and so influence behavior.

The popular forms of spiritism leave mind out of the natural system as disembodied process and hence inaccessible by the available methods of natural science. This throws our program of scientific study into bankruptcy just where we need it most, in our analysis of human conduct. It accords better with present scientific evidence to take (as a working hypothesis) a radically mechanistic view, and regard our minds as functions of our bodies, and more specifically of the cerebral cortex. On this view the study of conscious processes introspectively and the study of objective behavior are merely different ways of approaching the natural history of man.

This functional view does not solve the philosophical problems of the relation of mind and body, but it is adequate for the scientific and practical study of problems of human behavior. The case is somewhat similar to that of gravitation, already mentioned. We know what the force of gravity does, but we do not know the actual mechanism. Nor do we know the ultimate cause of any natural phenomenon, or the final explanation of the relation between any substance and its properties. We take these things as given in experience, and adjust our behavior and our scientific hypotheses to them as best we can.

Obviously there are all sorts of mechanisms with all sorts of properties or behavior. Of some of these things we have objective experience, and the indications are that our subjective experience is one of the ways of working of a very special kind of mechanism found within our own bodies. We can thus articulate the whole of introspective psychology with a mechanistic biological science, though this involves some change in our traditional conceptions of mechanism.

Some changes of this sort have already taken place. It used to be customary, and still is in some quarters, for biologists to assume a special vital force, an "entelechy," or some other mystical principle, to account for the very peculiar properties of living bodies. Most biologists now find such hypotheses unnecessary. It is simpler and in better accord with the known facts to say that vital forces are natural forces which differ from those of any dead mechanisms just because living substance is a different kind of mechanism.

In just the same way we may say that the energies of the mind which exert a regulatory control over conduct are functions of a very special kind of living mechanism found in the cerebral cortex. Brain power differs from muscular power just because brains are differently constructed from muscles. In short, if we enlarge our conception of mechanism to embrace the whole of the human body and all of its operations,

including the conscious acts, we have the only practicable scientific basis for a comprehensive study of human conduct.

If, then, our conscious experience does knit in with the rest of our living in this practical way, consciousness is not an epiphenomenon, a by-product, or any other sort of negligible factor in human biology. Such conceptions, and the philosophical doctrine known as parallelism, are unintelligible and unnecessary.

It is true that some of the lower animals get along, so far as we know, perfectly well without consciousness, and from this it might be argued that mankind might do the same, for our life is in many fundamentals like that of these lower organisms. But man has some organs, particularly in his brain, that even the highest brutes lack; and man can do many things that apes cannot, just because he has these organs.

Presumably a conscious act is a natural event; and since we cannot handle disembodied functions in biology, we are led to look for the organs that perform the functions that we experience as feeling, thinking, wishing, and the like.

We have not far to go in this quest. The facts are

at hand for an approximate answer to our question. It is clear that the eyes are part of the apparatus of seeing, the ears of hearing, and some of the viscera participate in emotional experience. The evidence is equally good, and of exactly the same sort, that the cerebral cortex, that gray external layer that makes up about half the total weight of the brain, is the specific organ of thought.

True, we do not know exactly how the brain thinks. Nor do we know how the retina of the eye translates luminous vibrations into nervous impulses and transmits them to the brain, or exactly how a muscle contracts. But we know as definitely as we know anything in biology that each of these organs does perform the function mentioned. We know grossly what the mechanism of thinking is, though we do not know as much as we would like about the minute structure of the organs of thought, or how they work. We actually have more knowledge about these things than most people appreciate, and this knowledge is growing very fast.

The hoary question, How is the mind related to the body? is not an insoluble riddle. We shall find the answer by keeping at it and improving our scientific technique. We may regard it as already settled biologically that the mind is a function of the body, and of particular parts of it whose structural arrangements are already tolerably well known. Or, to

put it another way, the brain is a part of the body, some of whose activities are unconscious and some are conscious. Thinking is this part of the body functioning in specific ways.

We have made a great gain, for now we can study objective human behavior and the subjective experience of the individual who is behaving as one vital process; we can converge upon the problems of conduct with all of the technical procedures of both objective psychology and introspective psychology; and we know where to look for the exact mechanisms that are behaving in both objective and subjective fields.

This is the common biological method. The anatomist examines the structure of an animal's organs, the physiologist finds out by experiment how these organs work, and then we have the whole story before us, as soon as we can put these organs and functions in their places in the body as a whole. Now the cure of disease is possible, and the normal working of the organs can be controlled in a variety of ways.

After the functions have been correctly aligned with their appropriate organs, we can use either one as index or symbol of the other. From the structure of a fossil skeleton of an animal that has been extinct a million years, we can tell a great deal about the habits of that animal. And conversely, if a hitherto unknown species of fish is found by a competent

naturalist, he can, by observing its habits and external features, predict many details of the structure of the brain, and later verify his predictions by dissection of the specimen.

So introspective psychology, objective psychology, and the study of the anatomy and physiology of the nervous system converge their activities upon the problems of human behavior, to the end that we may learn how we behave and with what we behave. Better control of behavior will follow just as certainly as better control of your motor-car follows a better understanding of its mechanisms and the laws of their operation.

On this functional view the whole range of human conduct and experience is open to investigation by naturalistic methods. The objective study of human behavior and human institutions and my own introspective experience are alike valuable ways of approach, for my conscious life is known to be organically related with my conduct.

Our actual behavior at any moment is the resultant of the interaction of two factors: first, our innate organization — the reflexes, instincts, and temperamental dispositions with which we were born;

and second, the modifications of these innate factors effected by our post-natal experience — our education, what we have learned.

This is the familiar contrast between heredity and environment. Both factors are always present, for environment can act only on the hereditary organization given. Both of these factors can be controlled, to some extent, as fast as we learn how to do it and decide what we want to do — heredity with difficulty and very slowly by eugenic matings, and environment easily and very rapidly by personal effort and social organization. We have so far made but little progress in the first field, but control of the environment through applications of science to agriculture, business, education, and cultural ideals is the technique of modern civilization.

Progress in the elaboration of the physical equipment for more diversified and comfortable living has indeed gone on so rapidly of late as to be a real danger, unless progress in our spiritual ideals keeps pace with it. A man of primitive or barbarous impulses and ideals, if supplied with all of the apparatus at present available in industry, science, and war, is merely a more efficient barbarian, and he becomes a very dangerous member of society. We must find some means of ensuring progress in peoples' personal and social ideals — what they want to do, to acquire, and to become — or civilization perishes.

This is now the most acute problem of human biology, the most practical question before students of human behavior. Through the applications of science to industry, we have the technique of control of environment pretty well in hand. Further improvements in this field are sure to go on apace. But what about those improvements in human nature that are vitally necessary if we would avoid destruction by the very instruments of our scientific achievements?

Can we really change human nature? Some change seems to be absolutely necessary in the present standards of vast numbers of our people, standards of personal, social, and national responsibility and ideals of conduct, if we would avoid the destruction of our culture by war, by greed, and by uncontrolled self-determination. Can this be done?

The pessimism now so widespread in thoughtful circles seems to be based on the traditional conception that our spiritual values inhere in some mystical entity of a ghostly realm whose acts are capricious, lawless, and remote from the material world where human conduct finds its expression. Naturally we can hope to influence such a mystical agent only by equally unsubstantial means. Thousands of years of metaphysical dialectic and moral precept, supported by all the weight of intrenched religious authority, have signally failed to re-form the common human nature

of large numbers of our most "advanced" communities. Why?

Because human life does not work in a vacuum. Our overt behavior is a very material expression of the action of a material body upon a physical world. The motivation is in part readily traceable to organic reactions whose mechanisms are well-known — reflexes, visceral and glandular activities, etc. — and in part to wishes, desires, motives, purposes, and ideals whose organic mechanisms are not so fully understood.

But these so-called spiritual activities are not disembodied functions working *in vacuo*. Radically mechanistic biology does not discard them as irrelevant, nor does it appeal to mystical non-physical categories. It recognizes our spiritual motivation, in common with all the rest of our conscious experience, as the natural function of specific organs — in this case the cerebral cortex and other parts of the body physiologically related to it.

There is a well known mechanism for all of our conscious experience, including our most refined spiritual values. This is part of our bodily organization, and of course it works in accordance with biological laws, the same as the rest of the body. It is not the same kind of a mechanism as an airplane or a reflex is, and so, of course, it performs a different kind of a function.

Man is an animal, and mechanistic biology cannot be accepted, even as a working hypothesis, unless it can embrace the whole of human life, physiological, psychological, esthetic, moral. If these last components of our personalities must be excluded, if our scheme breaks down at the finish, as many mechanists seem to believe, then the whole fabric crumbles. The trouble with these naïve mechanists is that they have too primitive a notion of mechanism.

We have stressed the differences between various kinds of natural mechanisms and the things that they do. These natural mechanisms are in constant flux. Our sidereal universe and everything in it is undergoing evolutionary change. These changes are orderly, not lawless or haphazard; and with every change a new pattern of mechanism appears. We naturalists do not go outside the natural cosmos in our search for the causes of the emergence of these new patterns. Metaphysicians may do as they like about this and we have no quarrel with them. But as for us, we can deal only with phenomena of which we have experience.

We do have experience of the emergence of new patterns of mechanism and behavior. In the course

of the evolution of the Mississippi River, a delta appeared. This was a new thing, which arose in accordance with well known laws. In the evolution of the vertebrates, the cerebral cortex arose, a new pattern whose origin we are just now beginning to understand. In the evolution of the primates, the associational apparatus of the cortex expanded enormously at the transition from brute to man, a pattern whose full significance we do not yet appreciate. And with the emergence of this last pattern came symbolic thinking, language, abstract ideas, moral sentiments, and all the furnishings of modern culture.

Each of these new patterns of structure and function arose by natural process from something else already there. They were not made out of nothing. But they were really new and the emergence of the new has nothing mystical about it. Emergent evolution is as mechanistic a process as the formation of a mountain range or the growth of a pumpkin seed. That is the way these mechanisms work. We don't know how they do it, but that they do do it is an observed fact.

Now the human brain, with its marvelous mental functions of intelligence, imagination, reason, prediction of future events, and fabrication of ideals of personal character and national aspiration, is a creative agent in this process of natural emergent evolution. And it is an agency of very different kind from

the geological forces at work in the growth of a river system or the physiological forces seen in the compounding and conditioning of reflexes. For each human mind can recombine the elements of experience in infinite variety of new designs. Imagination supplements knowledge, and invention fabricates entirely new devices, by rearranging familiar parts in original ways.

The individual person is constantly thinking new thoughts, reassembling his memories of past experience in new patterns, in imagination and fantasy, inventing new ways of doing familiar things, and putting old tools to new uses. Something new emerges with every excursion of a fertile mind. This novelty is the spice of life. Every act of creative imagination is an emergent, with natural antecedents and natural consequences, not the kindly gift of a beneficent brownie who lives outside of ourselves.

The climax of human creative power comes when the person forms an ideal of character which he consciously strives to attain. He may subject his body and his mind to a rigorous course of training, and in the end he acquires enlarged self control and a personality which in some degree he has himself fabricated. He plans a career and a character, and he fashions these by his own efforts by as natural a process as he employs when he designs and builds a mouse trap. When he thus consciously and purpose-

fully participates in the shaping of his own character, he may properly be said to exercise moral freedom, in so far as this notion is susceptible of naturalistic treatment.¹

These are all natural processes, performed by natural mechanisms. The organs differ, as do the functions performed. Our ideas of natural mechanisms are now enlarged to embrace all of human nature. Nothing is left over; there is no occasion for appeal to mysticism.

Now, returning to the crucial problem of changing human nature, since the whole of human life and experience is a natural process, it is open to scientific study with reasonable hope of discovery of the laws of its operation, and ultimately of at least some measure of control of these operations. It is, as we have said, merely a question of learning how to do it.

We already know how to do a great deal in this field. Actually, human nature has changed very much during the few thousand years of which we have accurate records. Most of this change has taken place unwittingly, without deliberate intent of anybody.

¹ In another work I have attempted a naturalistic treatment of human freedom: "Fatalism or Freedom," New York, Norton, 1926.

We can do it now much more rapidly by concerted social action in some definite direction, whenever we want to.

How much of the secular change in human nature is due to stable modification of the germ-plasm, we do not know. The question is not vitally important, for social control of the development of the individual personality is so easy, so effective, and so stable, that this is at present by far the most favorable line of attack upon the problem.

During the personal life of every one of us, our own natures have changed profoundly, from infancy to old age. The child is born with a given hereditary endowment which we must accept as it is. Whether good or bad, it is now too late to change it. It is, however, within our power, by parental training, schooling, and numerous other hygienic and social agencies, to determine in what kind of environment he will grow up, what kind of experience he will have, what sort of opportunities for physical, mental, and moral culture are available to him.

All of these things are under social control, and we can shape his development, within certain limits, as we like. Deprive him of proper food, and he will grow up a rickety cripple. Derive him of proper schools, and he will be illiterate and incompetent. Instill only ideals of selfishness and self-indulgence, and he will be a ne'er-do-well or a criminal. On the

other hand, good education strives for the opposite results — and gets them.

These rules are not infallible, for our social controls are never perfect, and in any event there is always the variable factor of differences in innate endowment to reckon with. But this is the prime function of education — to shape the course of development of the bodies and minds of our youth, to change their inner natures by the cultivation of such desires, ambitions, and ideals as are good for them.

We cannot change human nature by executive order, or by enacting laws and putting the violators in jail. But we can change it by reshaping their desires, what they want and work for. This cultivation of true values is a slow process, but it can be done by proper educational and other social agencies. Adults, the same as children, do not always want what is good for them. Proper training in personal and social values is the only way to correct this.

When enough members of our civilized nations really do not want war, and are willing to take the trouble to establish other machinery for the settlement of international differences, they will refuse to be stampeded into it by hysterical propaganda or infantile ideals of national aggrandizement. Wars cannot be avoided without this fundamental change in human nature, in the basic character of the people. Such changes are possible, and indeed are now

slowly going on in most highly cultured communities.

Changes in the hereditary structure of human nature brought about by eugenic practice are very stable. Those made in the personality by environmental (educational) measures endure only during a single lifetime. But this does not impair the efficiency of the social control, for the accumulated culture of our age is readily transmitted from generation to generation by the mechanism of social heredity, that is, by tradition and teaching. These changes, too, are very stable, though their persistence is brought about very differently from that of germinal heredity. Once a social convention, a taboo, or a pattern of thought or behavior is thoroughly wrought into the social life of a people, its persistence is so great that practically we cannot distinguish these individually acquired traits from characteristics handed down by germinal heredity. The effect endures, for better or worse. Social heredity in some cases seems to be nearly as conservative as germinal heredity.

Social control through proper education, building up better ideals of personal character and conduct, transformation of selfish and anti-social impulses into altruistic motives, weaving these personal and social ideals into the stable fabric of our social organization, the *mores* of our people — these are practicable enterprises, and in them lies the hope of

further progress in the evolution of human nature and human society.

In conclusion, the living mechanism, when viewed in its entirety, is big enough and good enough to embrace the whole of human life, all of our behavior, all of our subjective experience, and our most refined spiritual values. These values are in no way degraded or impaired by the recognition that they inhere in our natural bodies, and are colorful threads in the everlasting but ever-changing fabric woven by the Fates who the ancients said control our destinies from Olympus, but whom we now recognize as impersonations of our natural cosmos.

The finite mind can envisage only a fragment of this cosmos, and it fain would complete the picture by peering beyond the visible horizon into the unknown. Now natural science can deal only with that of which we have experience, and with recombinations of the elements of experience by logical processes in hypothesis. Art may recombine the elements of experience unhampered by logical conventions. Mysticism may ignore experience, and people the unknown with spirits free from the limitations imposed in our natural order. Natural science has no ground for conflict with art or mysticism, unless

these enter its own domain and meddle with its proper duties, namely, the enlargement of experience and codifying it.

Our natural science is necessarily mechanistic, because the only experiences with which it can deal are causally related and hence verifiable phenomena, and these phenomena when adequately explored are all found to be the operations of some kind of mechanism — in the upshot various patterns of matter in motion. Now we do not yet know what matter is, or the energy which activates it, so at present we rest our case here.

Some day science may go further in this direction. In the meantime we recall that each of the great epochs of the history of science was marked by bridging some gap in knowledge, formerly filled by myth or magic, with verifiable experience. The gap between matter and mind has not yet been closed by satisfactory factual knowledge; accordingly, mystical formulations are still current, even in scientific circles. Our failure to solve this problem is probably due to lack of suitable technique. The mechanistic hypothesis here presented seems adequate to embrace all of our present experience; and it has the advantage over the mystical views, that it opens the way for further scientific observation and experiment, a way forever closed to those who look to magic or the supernatural for the solution of scientific problems.



FREUD AND THE
CONFIGURATIONISTS

George Humphrey

ARCHIMEDES, confident in the force of his demonstration, had boasted that, if there were another earth, by going into it he could remove this one. — Plutarch, in *The Life of Marcellus*.

From time to time, in the history of thought, a man of science has stepped aside to survey the universe with a gesture of cosmic bravado. Such a time was when Archimedes, mathematician and eccentric, wrote to his royal kinsman, offering to move the earth, if he could obtain a foothold, and followed up his boast with mechanical feats of an astonishing virtuosity. Such a time was also when Laplace, statistician, astronomer, and physicist, declared that an intelligence, vast enough, and with knowledge of all the forces of nature and of the positions of all the beings composing it, could calculate, from these data, all past and present history. Such a time was also when a Viennese physician, Freud, declared that the mind itself, in its airiest whimsies and fan-

cies, followed the universal rule of causation which Archimedes and Laplace had affirmed to rule the world, inscribing on his book the motto, "If Heaven's will I cannot bend, Hell I will move."

The moving force in a human being, according to Freud, is Desire. Man *wants things*. Sometimes he knows what he wants: his thought is conscious. Sometimes he does not know what he wants: his thought is then unconscious. He may desire at the same time two incompatible things, one consciously the other unconsciously. This is mental conflict, which Freud declares to be at the root of all mental trouble. But order rules such a clash. For just as the discordant chaos of the physical world is governed, to the fall of a leaf, by the laws of physics, so each incident in the mental struggle has its own mental cause, down to the most capricious thought, word, or action. *Fundamental conceptions of Freud's psychology are those of the unconscious wish, of conflict, and of what he calls psychic causality.*

Let us see how he came by them and how he employed them.

During the eighteenth and nineteenth centuries, remarkable for their advances in physical science, there had seemed to stand out from a universal *schema* of causation one exception, the thinking and acting creature, Man. Despite such brilliant speculations as that of La Mettrie, who had, fifty years

before, published his book, *Man, a Machine*, the majority of early nineteenth century scientists were inclined to allow the exception. Even Laplace did not include free will in his cosmic calculus. Fifty years later than Laplace, Darwin had shown that Man was an integral part of the world about him, differing in degree, not in kind, from the rest of living creation. But Darwin's Man was the man of the physiologist, the moving thing among other things, the body that can be weighed, dissected, and subjected to chemical analysis; and formidable though the theory of evolution seemed to be to the doctrine of human uniqueness, there yet remained, untouched by physical causality and thereby set off from the rest of the world, the essential part of the human being, the mind by which he is conscious.

It was this unique characteristic that Freud aimed to take away from man by postulating a rule of strict causality in the psychic, the last stronghold of independence. The principle established, he used it to make a scarifying analysis of the human soul. Thus was sired psychoanalysis, by physics out of psychology.

On the psychological side, the initial step towards the Freudian position was taken by Charcot, director of the famous free hospital at Paris, who made the first serious study of that curious state of abnormality known as hysteria. These researches of Charcot's

lay mainly along physiological lines. He made a series of most careful tests upon the disturbances of sensibility of the skin and sense organs, on the contracture and paralyses that occur in hypnotized subjects, and came to the conclusion that they were identical with those observed in hysterical women. Accordingly he announced that hypnosis itself is a state of artificial hysteria, produced only in hysterical patients. Certain it is that his methods of inducing hypnosis — the banging of gongs behind the unfortunate patients' heads, the firing of pistols, the startling of them into abnormal states of emotion — coupled with the prestige that he and his famous school of the Salpêtrière enjoyed, would be enough to produce prodigious effects on the susceptible. Whichever party had the right in the historic controversy that followed the announcement of these views — and there are, even today, those who agree and those who disagree with Charcot — the result was to bring into scientific repute problems that had hitherto lain in the disreputable borderland between psychology and medicine. "Charcot," says Freud, in his eulogy after the former's death in 1893, "restored dignity to the subject. The sneering attitude which the hysteric could reckon on meeting when she told her story was given up." These researches led to one of the key problems of what was to be the Freudian psychology. I still quote Freud's eulogy.

“How comes it that the patient is subject to an affect [emotion] of the causes of which he claims to know nothing?” For most of the hysterical patients could give no account of the painful transports, of the deadly fears, the attacks of weeping and rage from which they suffered. The recognition of a problem is a step towards its solution. By pointing out that in the hysteric’s inability to account for his actions there lay a problem, Charcot prepared the way for the most characteristic doctrine of the Freudian school, that of the unconscious. But it is necessary to pass from Charcot’s work to that of another great Frenchman, Pierre Janet, his successor at the Salpêtrière.

Janet attacked the difficulty that had been bequeathed him by his famous predecessor. His solution was that the hysterical patient is unconscious of the reason for his mental state, because in him a whole system of ideas has split off from the main personality — seceded, so to speak, like the attempt at secession of the Southern States that resulted in the Civil War. To account for this secession, Janet postulates a state of low psychic tension, in which the bonds holding together the personality are weakened and the field of consciousness retracted. Thus he accounts for the puzzling amnesias, paralyses, anæsthesias, that have been so fully described in the literature. According to this conception, certain sen-

sations are unperceived by the hysterical patient, not because they do not exist, but because they open, so to speak, into a part of consciousness that is not in functional unity with the rest of the mental processes. But there still remained unanswered the fundamental problem. Why, when the central, unifying personality is diseased, and the resulting state of low psychic tension has followed, does one part of the personality tend to split off from the rest? What forces the cleavage? *Why*, in short, a cleavage? The point was never really faced by Janet, who seems to have assumed that a central unifying force was necessary to hold together what would otherwise fly asunder.

It was here that Freud appeared on the scene. Himself a pupil of Charcot, he began in the last twenty years of the nineteenth century to publish papers on the cause of hysteria. For him the great explanatory principle was the doctrine of psychic causality which we have already associated with his name. Every mental event, he claims, has its meaning, is part of a "sequence of mental concatenations." To one who objects that certain things — a gesture, a slip of the tongue — are "little acci-

dents," he answers with scorn: "What does the man mean by this? Does he mean to maintain that there are any occurrences so small that they fail to come within the causal sequence of things, that they might as well be other than they are? Anyone thus breaking away from the determination of natural phenomena at any single point has thrown over the whole scientific outlook on the world."¹ To one with such a "scientific outlook on the world," the suggestion that Janet's instances of dissociation are due to a tendency of the mind to split apart when the unifying bonds are weakened is as clearly impossible an explanatory principle as would be to a modern physicist the explanation that rubbed amber attracts pith balls because it has the property of attraction. Freud must ask why the personality tends to split up, and why, in any particular case, the dissociation takes this or that particular form. That is to say, what is the particular cause that has led to this particular mental event?

The answer is startling in its boldness. The vanished parts of consciousness have been thrust away in the stress of an endless struggle that is the mind, a struggle which, according to Freud, has for its ultimate object the attainment of the maximum pleasure. "It seems," he says, "that our entire psy-

¹ *Introductory Lectures on Psychoanalysis* (Geo. Allen and Unwin, London, 1922), page 21.

chical activity is bent on procuring pleasure and avoiding pain." Thus arises a dynamic calculus of ends; in it are involved the more primitive urges toward the direct attainment of pleasure, urges which are, for the most part, unknown to the main personality; but there are also involved the relatively more sophisticated drives of which we are conscious, and which, in their turn, are forced by the realities of life to seek their pleasure equally by avoiding pain. The one group, composed of infantile, crude, unconscious wishes, comes in the course of individual development to be overlaid by the other, with the result that we have set aside within us a mental region where joy may be unconfined, just as, to use a superb phrase of Freud himself, a country may set aside a part of its resources for the purposes of pleasure, "like the Yellowstone National Park." Into this pleasurable sanctuary of the unconscious are forced such desires as have grown up by the contact of the individual with reality, but which have, for one reason or another, proved refractory to the reality principle, that of enduring necessary discomfort for the sake of future pleasure. They are forced away from consciousness, because they cannot be reconciled with "the privation exacted by reality." The force which drives them is, "if we give it its real great name, *Necessity*, the struggle for life, *ANATKH*. Necessity has been a severe

task mistress, and she has taught us a great deal. Neurotics are those of her children upon whom this severity has had evil effects.”¹

Thus the dissociated parts of consciousness, to use Janet's term, have really been repressed, crushed away by the internal forces of the mind; and even though repressed, they can, by disturbing the general mental structure, produce those astonishingly complex deviations of conduct and thought which are known as symptoms. The task of psychoanalysis is to trace these down along the line of greatest resistance, until their unconscious origin is found, and then to remove the internal resistances which caused them. When this is done, a harmonious dynamic equilibrium is restored, a mental honesty that comes of facing the inevitable. Psychoanalytically, honesty is the best policy. It is, in fact, in many cases the only policy that will avoid disease.

The application of a conception so radical could not stop short at the stage of a clinical theory of hysteria. It became clear that here was an instrument of much wider potentialities. Little by little, as the full powers of the new instrument became evident, Freud's theoretical range was extended, until the primary hypothesis had been developed into a system embracing the entire field of psychology, normal

¹ *Introductory Lectures*, p. 298.

and abnormal, and touching on many aspects of everyday life that had not heretofore been considered amenable to scientific treatment. Freud offered explanations of old standing philosophical puzzles, such as the origin of humor and the meaning of dreams. He laid a cold analytical touch on subjects as far apart as anthropology, æsthetics, and the origin of popular songs, and placed an uncannily diagnostic finger on the differences, the little quirks of character, that mark man from man, as well as on the broad traits that are the common property of mankind, such as the love of life and the fear of death at the end. And the same fundamental principle animated the whole structure, the principle of psychic causation. The last stronghold of irrationality has fallen for those who can go with Freud all the way; and it is paradoxically the abode of rationality.

Much of the Freudian theorizing will undoubtedly be rejected by later generations. Already several of his hypotheses seem to run counter to experience, and one feature of the earlier theory, the exclusive insistence on sex as a driving-force, he himself is apparently beginning to discard. But for general power of far reaching speculation, for scope of imaginative intellect, his work has never been surpassed in the history of psychology; and the men of the future will, it may confidently be predicted, re-

gard it as one of the great landmarks in the history of the science.

As the Freudian movement sprang from the thought of the nineteenth century, so the school of the configuration, or *Gestalt*, is characteristic of the twentieth. In an essay on atomic theories, Professor Bragg, speaking of matter, electricity, and energy, makes the following statement: "Nature herself has already chosen units for them. The natural unit does not, of course, bear any relation with our own. . . . Nature has chosen to speak in a certain language. We must get to know that language." With certain changes of implication, these sentences might be taken as the motto of the Psychological School of the *Gestalt*.

Let us imagine a scene in the laboratory of a distinguished chemist. He is approached, let us suppose, with a request to write an account of his science. That is a hard and complicated task, but not an impossible one. But now add one condition. "In writing this work," let us tell him, "you must adhere to the Greek analysis of matter into earth, air, fire and water." It is not difficult to imagine the kind of answer he would give. "My dear

sir," he would say, "what you ask is an absurdity. The whole science of modern chemistry has been built up round the conception of the chemical elements. A large part of such a book would, of necessity, deal with the properties of the elements and the manner in which they combine. To write it on the condition you propose would be to make an absurdity of what the science has already accomplished; and if the book were taken seriously, which it would not be, it would render all future progress impossible. I must regretfully decline the commission." If the chemist were of a philosophical turn of mind he might add that while the Greek classification of matter was an exceedingly brilliant speculation in its day, its time of usefulness had passed, and that its replacement by the modern method of classification had made present day chemistry possible. "Furthermore," he might say, "neither I nor any other chemist *invented* the chemical elements. We recognized what our observation appeared to show us as independently existing, namely natural divisions of matter. This the Greeks, because of their lack of adequate technique and knowledge, did not and could not do. But this recognition of the natural units of matter has made possible a new science of chemistry."¹

¹ Professor Bragg should not be held responsible for the example, which is the writer's. The physicists have of course, for the purposes of *their* science, made a still further subdivision of matter.

Now the configurationist school claim to have introduced a similar innovation into psychology. *They maintain that they have found the natural method of analysing mind for scientific purposes. That they have seen for the first time certain ways in which mental phenomena actually do group themselves. That is to say, that they have discovered a natural unit of Mind, which they term the Configuration or Gestalt.* If we may believe them, previous psychology has been analysing Mind in terms of "earth, air, fire and water," using false units. The science, they claim, must now be re-written round the new unit, and a large part of it devoted to an account of the properties of the configurations and their method of interaction. Because of the old method of analysis, psychology they say had come to a standstill. Any great progress along the old lines would be as impossible as it would have been for the Greeks to have synthesized rubber or isolated aluminium.

None of the present day schools of psychological thought escapes criticism—the left wing, made up of those who confine their attention to the introspection of their own mental states, "experience subjectively regarded"; that keen and fighting band on the right, which refuses to truckle with "consciousness" and considers only behavior; the moderates of the center, who interest themselves in behavior, but explain it by the aid of introspection—all incur

the same reproach. They have been falsely dividing their subject matter, refusing to recognize its inherent divisions. They have been slashing across the delicate tissue of the mind, where it should have been dissected along the lines of its natural structure.

For consider the traditional psychological analysis, as set forth in the orthodox textbooks. Where the sympathies of the author are behavioristic, one is invited ultimately to reduce all conduct to a complex series of stimulus-response relations; in a book with introspective leanings, the ultimate irreducible is the sensation. But these, say the configurationists, are false analyses; in the process of subdivision something has been destroyed. When the Greeks analysed matter into earth, air, fire and water they did not carry analysis far enough. If a psychologist analyses a melody or a word into a string of sensations he carries it too far. He has killed something, as can be seen if the attempt be made to build up the whole again out of the separated parts, *keeping them isolated and unaffected by the fact that they are in the whole*. It cannot be done, say the configurationists. If, for example, measurement be made of the time it takes to recognize each individual letter of a word, and these times totalled, the sum much exceeds the time taken to recognize the word. The word is not simply the sum of the isolated

letters; if it were, there could not be this difference. The word is rather something new, created when the letters are put together. It is a Configuration, not divisible into parts. Such analysis as that of a word into letters, say the configurationists, is the kind that has passed muster in psychology. *It is a false analysis, because its products* — the letters — *do not re-summate to form the original datum*, the word. Nobody, again, could possibly construct a tree, "with its hard, rough gray trunk, its numberless branches swayed by the wind, its smooth, soft, shining leaves," to quote a famous description, out of "ultimate elements which are colors, sounds, spaces, times" — the sensations. Nor could anyone reconstruct the conduct of the "wily adder, blithe and glad," out of a series of reflex responses to a parallel series of tactual, visual, kinæsthetic stimuli. As a matter of fact what is actually observed in each case is not such a series of individually discrete terms, but a whole-datum — a tree, a snake chasing a frog; the individual sensation, the isolated stimulus or response, is never observed. I think Whitehead somewhere observes that murder would be the prerequisite for the absorption of biology into physics, as expressed in the traditional concepts. If one may be pardoned a paradox, murder, according to the configurationists, would undoubtedly accompany the creation of an organism which would

react with discrete responses to discretely separate stimuli.

Thus the *Gestalt*, or configuration, which is claimed to be the natural articulation of the world of mind or behavior as actually observed, is set up in place of the hypothetical sensation and the hypothetical stimulus-response relation of traditional academic psychology. Such sensations and lonely stimuli are unnecessary artifacts, scientific figments that have failed to justify themselves. Psychology must deal directly with the configurations, with the conditions of their establishment, their mutual interaction, the laws of their change. Attention must be directed not to hypothetical irreducibles, but toward the whole data of experience, figures on backgrounds, total reactions to total situations, whole units as observed. Such a whole unit again cannot be built up out of its parts by simple addition, for it consists of the parts with something more added. Conversely, no configuration can be split up into its component elements. Take, again, the case of apparent motion. Suppose a circular beam of light to be projected intermittently on a screen in a dark room; the observer sees a white circle appear and disappear. Suppose now another similar beam thrown on the screen at a short distance from the first and at a brief interval of time after it. The observer does not now see one circle appearing and

disappearing, followed a short distance away by another circle similarly appearing and disappearing; but if the time-interval is properly chosen, he sees one circle moving across the screen; and by the alternate projection of the two beams he may be made to see a single circle shuttling backwards and forwards. The addition of the second spot of light has completely altered the character of the visual perception. A new configuration has been formed—one that cannot be built up out of circles at rest; each of the two stationary figures has been completely transformed by inclusion in the larger unity. This is, of course, the principle of the moving pictures, where there is so complete a transformation of successive static views into continuous motion, that when we watch, for example, a picture of a man diving, no human eye can ever see what is actually presented, which is twenty or so successive stationary postures. And just as our perception of any one of these stationary postures is altered because of the fact that it is shortly preceded and followed by other stationary pictures, in the same way an object's stimulus-value for our conduct is clearly different, according to the configuration in which it occurs. I react very differently to a chair when I see it as a weapon for defense against a burglar, and when I see it as something to step on, in order to hang a picture. The inclusion of a thing in this or that

configuration profoundly affects the response which it calls out, or the perception to which it gives rise. A tone is heard differently, according to its place in the scale—a fact recognized by musicians, who maintain that it admits of no possible doubt. According to certain experiments, even a color will be seen differently, according as it forms part of this or that configuration. And if I read a paragraph

1) these two signs have an altogether different appearance from that which they present in the bracketed word (total). So far, then, is the configuration from being merely the arithmetical sum of its parts, and analyzable into them, that the parts are what they are by virtue of their inclusion in this or that configuration. The whole is prior to the parts, not *vice versa*. The configuration is the vital thing; its elements are secondary.

The use of this conception of configuration enables us, it is claimed, to launch an entirely fresh attack on the whole psychological problem. In particular, certain fundamental difficulties may, it is stated, be restated in more manageable terms. Reasoning, for example—the act of seeing and solving a problem—involves a process of “structurization,”

of creating a new whole. When Professor Köhler's chimpanzee placed a box on another, to reach a banana, the animal thereby brought into functional relation the isolated, previously performed actions of dragging a box, lifting a box, standing on a box, and so on. These actions are colored, slightly modified, by the fact that they occur in the unitary action of piling-boxes-to-get-banana. The act of seeing the solution is also structured, and is called by Köhler "insight." As contrasted with the piecemeal, trial and error method, it is of an "all or none" nature. The organism, in the view of the Gestalt psychologists, effects a creative synthesis first of perception and then of action. In each field a new unit is formed, which subtly modifies the originally independent perceptions and actions. The young man in love sees his lady differently from the way he saw her before, and behaves differently toward her. In the same way, the animal which has solved the box difficulty sees the boxes differently and reacts differently toward them because of his "insight" into the problem.

Nor can association, as traditionally conceived, account for the process, for it implies a stringing-together of atomistic ideas or stimuli. John Locke claims that we "join ideas together" that are "in themselves loose and independent of each other." "From St. Andrew the mind runneth to St. Peter,

because their names are read together," says Hobbes, another believer in association; "from St. Peter to a stone, for the same cause; from stone to foundation, because we see them together." According to this notion, which fairly represents the associational point of view, mental structures are piled up by a chance which has brought together certain mental processes in consciousness at the same time. The physical world, according to Lucretius, is a "*fortuitus concursus atomorum*," a fortuitous concourse of atoms. An excellent phrase, and one most completely descriptive of the traditional doctrine of association, whether of the original kind, which thinks in terms of ideas, or of the newer kind, which deals with stimuli and "conditioned" responses, such as those obtained by Pavlov in his laboratory, when a dog learned to "associate" the sound of a pitch-pipe with food, and thereupon secreted saliva. Such a theory of memory and recall, which explains them by the mere concomitance of stimuli or ideas, is clearly quite foreign to the conception we are considering. According to the configurationists, memory cannot arise from such piecemeal accretion. It cannot spring from the "fortuitous concourse" of ideas or stimuli. Rather, one must think of complexes of ideas or of stimuli as shaping themselves under internal, not external, pressure, a point which is implied in Freud's theory. Ideas do not cohere helter-

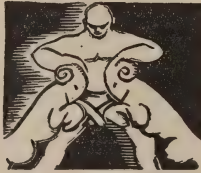
skelter by some statistical law of mental mechanics, nor do stimuli "condition" themselves by majority-vote; but ideas are connected according to an inner necessity of the organism, stimuli are conditioned in the same way. When we learn a series of nonsense-syllables, we do so by attaching, if we can, a "meaning" to the syllables; we arrange them in a "series," we repeat them in a rhythm. When we "condition" a stimulus, we do so, as Pavlov has pointed out, according to certain rules of prepotency of stimuli, to use a term that the physiologist Sherrington has employed in another connection. A strong, destructive stimulus, such as the direct action of an electric current on bone, cannot be made to cause a salivary reaction by association, however many times it is associated with food, though a weak one is easily induced to do so. That is to say, the "fortuitous concurrence" of stimuli or of ideas is not enough to form a tie between them; the tie can be formed only on the terms imposed by the organism, and we must think, say the members of the new school, of certain configurations, into which it may or may not be possible to introduce the new term or set of terms. Memory is then not a matter of throwing one more fly on the stick-paper; it implies rather the inclusion of one more member in a group, which may later be reproduced as a whole on presentation of one of the stimuli concerned—a fact which has long been

tacitly recognized no less by the psychologist than by the man in the street. And memory, with all that it implies, is one of the great problems before psychological science, if not the greatest of them all.

As in the case of psychoanalysis, it is impossible here to trace all the ramifications of the theory, so far has it advanced beyond its original bounds. It has been invoked with apparent success to explain the facts of mental disease, the problem of æsthetics, the effects of gunshot wounds in the head, the apparent size of the moon. It has far reaching physiological and linguistic consequences. It enables us, it is claimed, to obtain a deeper insight into the mental processes of primitive man, of chimpanzees and hens, of human beings engaged in mathematical problems, and it sheds light on that queer *reductio ad absurdum* of mind itself, the so-called optical illusion, where mind, judging, judges itself to be mistaken. It is then, perhaps, not surprising that the word "configuration" is forbidden in at least one of the laboratories from which much of the work has originated. So fearful are the founders of the movement, good men of science that they are, lest

the enthusiasm of their followers may outdo itself. For the hypothesis is yet young, and its partisans few in number.

Scientific thought is the child of its generation. Psychoanalysis sprang from the nineteenth century, with its prolific application of the principle of causality. The configurationist movement forms part of a twentieth century reaction from an atomism bred in much earlier thinking by the misapplication of certain methods of physical science. Both theories will take their place in the great synthesis that is yet to come.



**MIND AND EMO-
TIONAL CONTROL**

Joseph Jastrow

THE distinction between feeling and thinking is justified in practice as well as in psychology. When I say that I don't *feel* well to-night, and add that I *think* I caught an infection in the train on my way home, I am accounting by way of reasoning for symptoms that I can experience only in organic terms. Yet I may say that I *feel* a draught, or that the howling of the dog outside makes me *feel* uneasy; or that I *feel* worried because I haven't had a letter from my son all week, or *feel* a bit irritated that he neglected to write, but then forget this in the *feeling* of joy in learning that the stocks I bought last week have advanced ten points; but I get a different kind of *feeling* or pleasure thrill in looking at a rare tile (an æsthetic *feeling*) which I bid for at an auction against a rival collector whom I dislike, — another *feeling*. In all this mental activity there is a composite mixture of feeling and thinking in the loose ordinary sense; and no less in the strictly psychological usage.

The fact that there are so many senses of the word "feeling" is not accidental; it covers a varied range of experience. Since the problem here to be discussed is to trace the play of "feeling" in the world of thought, of the upper reaches of rational

control of behavior particularly, it may be well to introduce the discussion by a brief outline of the stages of feeling.

It is generally agreed that the central purpose of psychology is to account for behavior; feeling and thinking are in the interests of doing. But so large a sector of human behavior can be managed only by thinking, by analysing a situation and perceiving its relations, that this area of conduct, this solving of problems, trivial and complex, engages our major attention. Thinking is the reaching of conclusions, attitudes, beliefs, decisions, choices, that determine behavior. But in all that the emotional element enters and again characteristically in the higher stages. Thinking also includes all the preparatory stages and supporting processes of such reflection.

A similar statement for feeling is not so easily derived. It is better to use the term "affect" to cover the entire range of the life of feeling. It begins with organic affect, — the entire stream of bodily feelings of comfort and discomfort, of pain, hunger, thirst, tension, ache, distress, vigor, fatigue, rest, satiety, urges of all sorts. It includes the sensory affect of what I obtain by way of ear and eye and touch and taste and smell. But the use of these senses is turned outward and yields the purely logical or distinction factor of the noise which I *recognize* as a locomotive whistle, because as an *affect* it makes

a shrill *unpleasant* impression. I "feel" the unpleasantness and "think" the locomotive. So the entire æsthetic life forms a variety of affect but involves thinking also.

The central affect of all affects is emotion. The sudden start at the locomotive shriek is a bit of fear; the disturbance to my train of thought is a bit of anger. If instead the sound that reached my ears had been the voice of a welcome friend, the experience would carry the emotion of love.

Next in order is the composite of feeling and thinking that we name a sentiment. By reflection I convert my literal fears into dreads and worries and cares and griefs and disappointments. By the same route I compose my angers and irritations into hates and antipathies and prejudices and animosities. And in still more comprehensive manner I convert my likes and dislikes and loves and appetites into all sorts of affections and loyalties and sentimental endearances. And all these in turn compose into prides and shames, and are brought to consummation in my rich social life, in its give and take with the similarly composed sensibilities and sentiments of others.

By this complex route is my composite affective life constantly contributing to my self-feelings. I am elated or depressed; my moods vary with my complex satisfactions and annoyances. They all sustain or defeat my major purposes in life. It is mainly

at this level that my feelings color my thoughts, shape my beliefs, especially the beliefs I cherish. I am a deeply emotional organism, even more than a rational one. With this preliminary setting we may proceed to focus upon the rôle of the affective life in that rational control of behavior called thinking.

Feeling and thinking direct doing. An important chapter in psychology is concerned with the interplay of the feeling factor and the thinking factor in human behavior. Since the most comprehensive ranges of human behavior proceed upon many varieties of reasonings or thinkings, and often complex ones, it is best to focus from the start upon that significant high level intellectual activity, and sketch but briefly the earlier stages. The interest of the problem centers in belief and conviction and the life intellectual.

In the looser sense, most human behavior is intellectualized, in so far as it is directed by reasons, purposes, mechanisms — all as part of why we do things and how. Yet that “why” embodies the two divergent if fused varieties of “why”; the one, deriving from feeling, is called a motive, and the other, deriving from thinking, is called a reason. But all reasons are strongly or weakly motivated; and many, if not most, motives contain elements of reasoning. And in the ordinary rough measure of analysis sufficient for the ordinary man and the ordi-

nary occasion, there is little difference between pronouncing the *motive* of an act to be revenge, and giving that as the *reason* for it. The standard intellectual product that directs behavior is belief. The appeal to reason is the upper-level type of influencing behavior. Unless men were pretty generally, however imperfectly, rational creatures, the entire program of applied psychology, including mental hygiene, would fall far short of its possibilities, and civilization would have been impossible. The relation of feeling and thinking is a problem of large moment.

In the early evolutionary stages, the relations are clear. Their description requires a term broad enough to include all stages and varieties of what, when developed, is the field of emotion; the emotion occupies the great central area, and thus gives its name to the entire territory. Adjoining it, in the earlier stages, is impulse and instinct, and in the later course, sentiments. But the better name is affect; we lead an affective as well as an intellectual life. Of the two, and in their intermingling, the affect dominates. In the animal series, and in the infantile stages of human behavior, affect outweighs intellect: feeling rules. The feeling side of behavior is in evolutionary status the more fundamental. It supplies the urge or drive, the motive power. But the organism, being thus driven,

is not just driven or irritated into activity, just to discharge the accumulated energy; it is as an organism organized to do specific things that satisfy needs, avoid injury, adjust to the environment. Such, typically, is an instinct; and though the total response involves something more than an instinct—an instinct directed by other integrated mechanisms—it presents a considerable instinctive factor. The action follows a pattern; and when the action-pattern is closely bound up with an original urge and mechanism, it operates as a complete instinct.

The spider's web is such an action-pattern. It is not in point to hold that the spider has the urge to spin because it has spinnerets, or that it has the spinning mechanism because it has the urge to spin. The two are one evolutionary product, and so definite a product that, if you know spiders, you can by looking at the spider predict what pattern of a web it will spin, or, seeing the web, predict what species of spider spun it, or "behaved" it. Knowing birds, you tell a robin by its notes, by its flight, by its hop, by its nest, by its egg; for all these are action-patterns of its instinctive behavior. And you don't trouble much to consider how the spider or the robin felt, or what they thought, when they went through these performances. Web and nest-building and house building and home making may, in an ultimate analysis, have the same biological

function of providing food and shelter for the young; but their psychology is so many mental miles apart that the behavior of the man offers a wholly different series of problems in its action-patterns. Birds and men sing, and birds and men find their way and migrate, but the songs and the travel routes of the two orders of bipeds present a wholly different relation of urge and execution.

All this is essential to have in mind when we use such common terms as action-patterns, urges, mechanisms, behavior, feeling and thinking, affect and intellect. Man, in most of his thinking, perhaps even slightly in his most involved thinking, never rises completely above his instinctive urges — thinking is ever infused and animated by feeling — but insight and control of human behavior proceeds not upon the bare recognition of this common derivation, but upon the detailed relations that arise or emerge only in the psychology of markedly intellectualized behavior, typified by beliefs. Our problem is one of motives and reasons, projected to a high-level human plane of behavior.

The fundamental service of intelligence is the control and guidance of emotion embodied in im-

pulse or instinct. To personalize it, intelligence tells the instinct what and what not to do, decides which instinct is to be released and which held back. For most instincts leave large margins for variations in behavior. When a chick's feet first touch the water, the chick bends down and drinks; when the pup of proper age is thrown in the water, it swims. Drinking and swimming are fairly fixed action patterns. But there are various ways of fighting and escaping. When to fight and when to run, and whether to dive down a hole or run up a tree, and which tree to run for, are all more or less flexible behavior patterns, toward which (to limit the illustration to rodents) rats and squirrels are differently disposed, with resulting action patterns variable according to circumstances. They, too, must size up the situation and do some thinking in giving vent to their feelings.

On the human level the patterns are indefinitely more variable and complicated. Children run and fight as soon as they are able to, and give unmistakable evidence at a tender age that they feel and think and use their wits to get their way and satisfy their instinctive needs. Childhood is impulsive and markedly emotional, with strong feelings and weak power of control. Teaching children to be reasonable, to inject a desirable kind of thinking into their feeling, is a long and difficult process, and stages the conflict between the two factors of behavior guid-

ance that remains a lifelong problem. Too much feeling interferes with thinking; certainly is this true of the strong emotions, of the "destructive," the disturbing ones. Neither child nor adult in a panic of fear can do good thinking; they lose their heads, cry in alarm, run about wildly. Anger calls out the aggressive instincts, and what is done in a moment of passion is regretted when reason returns. When feeling runs high, reason runs low. But the constructive or more desirable emotions are open to the same excess, the same failings. Love is blind, and even more so is hate; the one sees all virtues, the other all vices, and neither sees things in their right proportions.

Yet thinking, we must not forget, like all behavior, is emotionally supported (as well as directed). Without the original affect of curiosity we wouldn't be disposed to observe, and, observing, to discriminate and reflect. Interest is the intellectual emotion. But it is more than interest; it is "caring," having the zest for doing what is best for self-interest. Both hark back to appetite, which primitively is the affective sharpening of the food satisfaction, and to taste, which is its selective expression. A large range of behavior is thus affectively-intelligently directed by way of preference; and for this we retain the primitive name, "taste," even when we speak of good taste in dress or decoration or music or litera-

ture. A large number of important decisions (and the resulting behavior) depend on good taste, quite as many as on good sense. Here is the approach to the esthetic life, in which feeling shares the direction with thinking. But the affects, the emotions involved, are of the milder, less urgent type. Fear and anger regulate more vital matters, closer to the necessities of life; the esthetic affects regulate the luxuries, the refinements and enrichments of living. Yet both enter momentarily into the combined thinking and feeling type of behavior.

To understand the upper reaches of such behavior, we must sketch the completer development of the affective life. The drive is feeling; its organization is thinking. The rational side of that direction is set toward the solution of problems. If the more fundamental employment of intelligence is for the control of emotion, the far more comprehensive employment is in solving the varied problems which the environment presents. That dominant aspect of thinking is familiar in the technical side of learning, in education. It makes for knowledge, for understanding, for mental skill and proficiency. It distinguishes, it compares, it analyzes, it constructs, it

invents, it plans, it executes. It is thinking concretely and abstractly, in principles and their application. We shall assume its presence and systematic organization as the product of reason.

When the emotions are intellectualized, that is, infused with meaning, and built up on this acquired educational plan, there result sentiments. If at first we are mainly impulsive, then largely emotional creatures, we soon come under the sway of sentiments, and live the major portion of our lives as sentimentalists, in the psychological, not the romantic sense. As soon as children are open to the appeal of pride and shame, they are already full fledged creatures of sentiment. Their pleasures and pains expand beyond the physical ones associated with primary needs and comforts, and the emotional ones of joy and grief, of elation and depression, of imaginative, playful anticipation and disappointments, to the completer sentimental stages, when names hurt more than sticks and stones, and praise is sweeter and love more consoling than sugar plums. Sentiments reflect the training of the environment, offering large direction of what children will take pride in, and of what ashamed. Not that virtue can be left safely to be its own reward, nor shame wholly replace fear of deprivation; but the things cherished and hoped for, the things feared and avoided take on far wider ranges of sentimentally desired rewards or

pleasures, sentimentally avoided pains. The feelings that are so easily hurt are by way of becoming or are well developed sentiments.

To understand the procedure, the spirit as well as the mechanism of this sentimentalizing process, we must take into account a double bearing of its emergence. The one is the social, the other the self-reference, — each complementary to the other. That man is a social being is profoundly true; for that sociality is biologically established in the gregarious nature of the human herd, and the instinctive incorporation of the many “social” tendencies of herd life. Presumably its primary function is protection, pooling the strength of numbers to offset individual weakness; but its derivative consequences entail a large craving for and susceptibility to sympathy and co-operative companionship, as well as dependence. The result is clear: that a large range of human emotions comes to be possible only in the social setting — the individual is dependent on others for a large range of his affective satisfactions. He derives from others his pleasures and pains; they alone can establish the prides and shames. From childhood up we must have an audience — others to admire us and see us perform — whether in the nursery or on any other stage of life where we play our parts. It is the pleasure of their approval we crave and cherish, the displeasure of their disapproval we fear and avoid.

And that extends to every highway and byway of our behavior, so very much of which is suffused with the social quality — requires for its exercise the social setting.

But in this very statement the self-reference is inherent and decisive; it is the true affect of which the social aspect is the obverse imprint. It is *my* pride, *my* self esteem, *my* affective barometer that goes up at every attention and compliment, and down with every neglect and slight. *My* self is set up with pride and cast down by shame. The vast enlargement of my pleasure field by the stimulations of my training are established through the social *milieu*, all of them embodied in sentiments to which my feeling-and-thinking has learned to respond. And as these sentiments, though primarily felt, are given a statement and formulated in principles — which is their intellectual counterpart — they approach the status of beliefs or convictions, yet derive their strong power to influence my behavior, intensely and excitedly, through their affective hold.

Anger is centrally emotional, but hate is sentimental. I maintain my anger in the form of hate and reflect upon my wrongs, plan revenge, and develop strong antagonisms, to which I give expression in the language of words preparatory to or replacing deeds. And so are my attachments sentimental; it's all love, sentimentalized affection — love of the

lover for the beloved, love of family, love of country, love of causes and institutions.

As a consequence of the strong appeal of angers and hates, fears and dreads, loves and affections, and their further fixation in an elaborate system of prides and shames and the derivative personalized and socialized sentiments, man remains, even in his avowedly intellectual occupation, emotionally influenced; he feels as much as thinks his way to attitudes and convictions. This refers not only to the fact that much of his thinking proceeds upon vaguely-apprehended, subconsciously operating motives and predilections which he cannot formulate, but even more to the quite conscious predilections and prejudices to which he is subject, and which follow him in any logical venture. Sentiment appeals more than reason, and when strong enough drowns the still, small voice of reason wholly.

Consequently, also, the oratorical appeal, swaying opinions and votes, proceeds mainly on an affective pattern, however the statements assume the form of an argument. The orator and the propagandist carry the crowds; and so equally the persuasive promotor, the ardent fanatic, the grandiloquent quack. And no less the exhorter and reformer in worthy causes must play upon the feelings to influence belief, while yet their technique of persuasion recognizes the dominance of reason. In all the applications

that follow, the general theme that feeling is by nature strong and early, thinking weak and later in the direction of behavior, must be borne in mind. There is ever the tendency to fall back to earlier patterns of behavior, and this regressive factor loads the decision in favor of feeling. Reason has had to make its way against these naturalistic odds.

With this bare outline of the human affective psychology, we proceed to its application to the compound products of feeling and thinking centered in the realm of belief, where sentiments and principles, convictions and complexes fuse and compete for control of human behavior, for rational control as an ideal.

Man is not only a rational animal; he has a pride in his rationality. He goes on the principle that he does things for good and sufficient reasons — that he is reasonable in his attitudes and expectations. Particularly in shaping his beliefs and his inclinations to belief, which may be called belief-attitudes, has he the moral ideal of following the path of reason, which points the way to truth. Right feeling and right thinking lead to right acting. The distinc-

tion between wisdom and folly is likewise there founded.

The thesis of largest consequences is this: that feeling invites all sorts of deviations from right thinking. These may be regarded as the emotional impediments to thought. To keep the survey compact, I shall consider them under definite headings, though in several instances their spheres of influence overlap.

1. *The impediment of strong feeling.* Here belong the angers and hates, the fears and anxieties, the passionate loves and distracting attachments that have been reviewed on the way to the major considerations. Here belong also, and more primarily, the impulsive assertion of instinct precluding any higher type of response. When we observe a hen in a frantic effort to escape from an oncoming vehicle, trying to run ahead and cross the road, when it would be perfectly safe if it stayed where it was, we comment on the folly of instinct. Though not in so crude a fashion, our instincts stand in the way of reason. People have been known to seek refuge under the bed-covers to escape the lightning and thunder of a storm at night.

2. *The two orders of thinking.* A distinction always recognized has been given its proper place in the Freudian psychology; it is popularly that of dreaming and thinking, but extended to include day-

dreaming or fantasy. Here there is much imaginative drifting, along with some logical steering. As a matter of fact, it is an order or procession of images and ideas far nearer the design and the mood of the dreams that come in sleep, and is the more natural, the earlier, the nearer to childhood, the less strenuous and more relaxed manner of "thinking." Out of it, by selection, has grown true, purposeful, directed thinking. Psychologically it is easier to "dream" than to "think." We fall back upon it in our relaxed, off duty moments. The two orders of thinking have thus their genetic relations. Furthermore, fantasy is pleasant; it follows Freud's pleasure-principle; and that, as its affective tone, accounts for the ready indulgence in it. In contrast is the reality principle, that forces us to face things as they are and to think logically. Hence, under severe stress we escape from reality by the pleasure route of fantasy. Perhaps, of all the impediments of thought, the most commonly tempting is fantasy — thinking things nearer to our interest and desires.

3. *Autistic thinking: Delusion.* But the motive or compulsion to thinking out of relation to reality may proceed by way of more intense emotion than the pleasure of fantasy. It may proceed in response to fear or to anger, and give rise to delusion and violent behavior. Delusions of suspicion and persecution, the belief that the world is against you, and the distor-

tion of everything you hear and see to confirm this dread, form a serious barrier to correct thinking, and are all emotionally inspired. So are likewise delusions of grandeur and their elaboration. The schemers and reformers, the martyrs and messiahs, the prophets and heroes, the redeemers and inventors, who dwell within the seclusions of mental disorder, and the larger company of the borderland minds who can still hold their place in a normal world, exemplify autistic thinking. They maintain beliefs largely by reason of this self spun plausibility that supports their emotionally sustained delusions. The term "autistic" is due to Bleuler, who later replaced it by the term "dereistic," or departing from reality, which is the same result from a different approach. The autistic products of the mind form the climax of the interference of feeling with thinking.

4. *Complexes*. The key-word of the Freudian doctrine is "complex"; and a complex is precisely an emotional impediment of thought. It is typically a belief—yet likewise an interest, a devotion, an attitude—so infused with strong emotion that it is cherished beyond the ordinary standards of proportion and value, if not of reason. It is an extreme—in so far as unreasonable—devotion. Such obsessional quality easily approaches the abnormal. But a complex, in that it is a naturalistic, clinical product, arising from the observation

of the psychic fauna and flora, has a wide range of species and varieties. It develops innocent and even helpful attachments, as in the hobbies and fads that may at times be deliberately pursued not altogether wisely but too well, for the sake of an added zest, a rarer joy. Collectors and devotees of sport maintain a "pewter" or a "golf" complex to their benefit, and they talk "pewter" or "golf" to their heart's content with a fellow devotee. The word "fan," which is said to derive from "fanatic," carries this implication of being "crazy" about this or the other enthusiasm, and forms a complex in lighter vein.

But the fanatic, burdened by more serious complexes, readily becomes the extremist, and may live a distorted intellectual life in the area of belief affected and infected by his irrational convictions. Should he carry them into action — or intermediately into attitudes of behavior — there may be all sorts of vagaries and even cruel disregards. When kindred spirits assemble under such a fanatically-minded leader, there arise all sorts of fanaticisms, from those of persecution for heresy and trials for witchcraft, to the converts to an imminent millennium and cults as various as the varieties of human interest and the deviations from rationality. The minor fanaticisms that take the form of mass-movements or the adherence of a coterie, may represent

partly a worthy reasonable cause, pursued not wisely but too far, and with some fanatical elements. It would then be true that in predisposed minds such causes are maintained on a complex rather than on a conviction. Just what causes will be thus regarded is a matter on which we may not all agree. Some anti-vivisectionists have a complex of sentimentality for animals; and while many prohibitionists reach their positions by the route of reason, others are so by the stress of a complex. A complex is often harbored in a reserved area of the mind. When you are told confidentially that you may talk to X on any subject but Y, there is a presumption that on this tabooed topic he has a mental attitude Z, which approximates a complex: it is a topic on which he feels more strongly than he thinks.

The conflicts operating in complexes — which in the Freudian view is inherent in their nature, certainly in such as develop a neurotic aspect — may be of various origins. When arising within the individual psychic arena, it may be a conflict between one affect and another affect, between a strong instinctive desire and an equally strong feeling of its unworthiness or immorality; it may be a conflict between such desire and a conviction that if followed it will lead to deteriorating consequences; it may be a conflict between the individual belief and the social consensus that opposes it; and in any given situation,

all these factors co-operate in the conflicting and disturbing influence of the complex. All such cherished and yet resisted trends present reflective thinking and affective-feeling elements. Belief attitudes concerning divorce, companionate marriage, marriage outside prescribed social (or religious) circles, freedom of access between the sexes, furnish a rich illustration of conflict between the cravings of sex and the institutions and beliefs for its regulation. It is thus intelligible that Freud should find in this domain the typical genesis of complexes and the neuroses breeding conflicts, and incline to find alike the pattern and the actual presence of this factor in all complexes. The clash of inclination and conviction, of feeling and thinking, becomes responsible for psychic collisions and mental tragedies.

5. *Minor varieties of impediment; superstition, vagaries, thobbing.* If we extend the term toward slighter deviations from the standard convictions that are assumed to be reached upon reasoning yet tinged with feeling, we reach a variety of belief attitudes that present the relations of feeling and thinking characteristically. Such, in temper even if no longer in the belief attitude, are superstitions. These we half believe, play with them rather than take them seriously, yet allow them to influence thinking in restricted avenues, and behavior yet more restrictedly. But in the long vista of the story of the

stages of learning to think, this type of impediment looms large.

Vagaries. There may be associated with it what David Starr Jordan's dialectic skill has portrayed as "sciosophy," or the pursuit of shadows, of semblances for realities, of a combination of ignorance with other thought impediments. The cyclopedia of sciosophy parallels in bulk and aim that of science. The contributors are the occultists, the esoterics, the believers in revelations and mystic symbolism, in astral souls and higher stages of intuition and deeper mysteries, in all of which emotional motives complexly mingle and disport themselves strangely to the rational observer. It is partly autistic "wish-thinking," molding the universe more dramatically, more majestically, more esoterically than is done by the dull, plodding, earth-bound, explorings of a paltry science that, declining to soar, prefers to grub in blind content. The loftier wisdom becomes to Doctor Jordan "the Higher Foolishness."

Thobbing. Mr. Henshaw Ward has introduced the word "thob" ("thinking without curiosity, having an opinion because one likes it, believing what is handy") to include all the varieties of "wish-thinking" (Professor Conklin's term) from thoughtless acceptance of floating beliefs and popular superstitions and plausible errors to the element of predilection that enters into what are in substance

and interest scientific and responsible doctrines and positions on all manner of subjects, including politics, biology, education, ethics, religion, psychology, philosophy, and all other "ologies" and "isms." However strongly professing adherence to scientific logic alone and the disinterested pursuit of truth, all the professors select their facts and go beyond them and interpret them with an element of preferred or prejudiced predilection. And in that welcome or anticipation (which the prefix *pre* indicates) lies the intrusion and distortion of feeling in the realm of thinking that makes "thobbing" universal. It's a useful term for what may be the most democratic impediment of thought. It does not care to discriminate between the very different status of "thobbing" when it is an inveterate habit and represents the level of intelligence in which it is a favorite occupation, and such thinkers as go far on a scientific basis with loyalty to logic, yet occasionally lapse into predilections where the trail of science ends. What is an occasional flavor in the latter is a constant ingredient in the former. As a composite photograph of many different sets of features, "thobbing" may take its place among the emotional obstacles to correct thinking in a comprehensive field of habits of many minds on all sorts and conditions of opinions. Not only does "thobbing" begin where knowledge ends; but to the many and the few, from the start and

throughout their course, they "thob" as they think, because their feelings are fused with their belief-attitudes — some, "thobbing" less, think more — others, thinking less, "thob" more.

6. *Personalism*. Under this term may be grouped a varied (but not motley, for they are of one complexion) group of impediments that radiate from a distorted self estimate and self interest. Dr. William White has well named it, by way of the decline of man's anthropocentric view of the universe, the "contraction of self." Through the inherent sense of self importance, man made the planet on which he dwells the center of the cosmos, and himself the climax of creation, his mental horizon, like the physical one, always extending equally about himself as a center. He resented the substitution of the Copernican for the Ptolemaic view, as a belittling of his own planet, just as he resented in latter day manner the degradation of the human species by the animal-affiliations of the Darwinian evolutionary heresy. Under the influence of tribal personalism, each nation becomes the chosen people, and the rest but *gentes* or gentiles. So each person continues to regard himself as important, distinctive, unique.

But personalism is even more influential in its minor, daily, hourly products, in all the varieties of prejudice. The frankest of these is self interest. So familiar a theme needs no amplification; and much

of it is justified. To the physician I may be only a case, to the lawyer a client, to the merchant a prospect, much as the mannequin to the modiste is an (accidentally human) figure on which to drape (or practise) the technique of an art. But to me, my "case," in clinic, or court, or office, is an intensely individual issue, saturated with emotional consequence, as would be the model to the artist who fell in love with it, whereby the neutral "it" became the glorious personalized "she." We naturally take a subjective view of ourselves, and resent the de-personalized, objective attitude, thereby seeing ourselves out of focus in the distorting glass of self-importance.

Personalism includes all manner of prejudice — prejudices favorable and antipathies — makes delicate the distinction between disinterestedness and indifference, makes difficult the exercise of an unbiased, judicial attitude, illustrates variously the vicissitudes of thinking infused with feeling. Apparently the accredited solution, in view of human weakness, is to represent Justice as blind. The world of human relations is beset with prejudices, which means judging in advance of the rational consideration of the evidence, which is thinking, through the inclination of feeling.

And in the inner conduct of one's own affairs and self justification, appear those subtle products which

it is the virtue of the Freudian formulation not to discover — for they are as old as human nature and human insight — but to expound. There is rationalization, by which we find good reasons for poor motives — a most versatile art; there is the defense-mechanism of compensation, equally versatile, preserving our self esteem by scattering a false scent, by accusing others by way of excusing ourselves.

It is because the extensive repertory of the impediments of thought through emotional magnification of self interest is so familiar, that its large influence may be indicated by a small reference.

7. *Conformity*. An equally familiar emotional impediment of thinking, of wide consequence, comes through the strong force of tradition, the imposition of the socially accepted attitude, whether of custom or belief. This, by the social strength of its adoption, acquires a high emotional value. Though it operates from the outside, it is the reaction from the inside that establishes it. For the only reality of response lies in the individual psychology; and social psychology is but its modification under the social situation and institutionally exercised stresses. What is outwardly tradition is inwardly the strong tendency to conform; and, once conforming, there arises the attachment to the established and the customary and the familiar that constitutes psychological conservatism. It is easier to accept, to conform, and

acquire a feeling satisfaction by way of convention, than to think, and, thinking, perhaps to question, and to differ. The mass influence of social disapproval or suspicion attaching to the nonconformist, and the sceptic, and the heretic, and the critic, and the eccentric, provides a formidable body of restraint that may become an impediment to thought. It strengthens as it limits the attachments — makes foreign ways seem queer and irrational — as the overcoming of the impediment makes for liberalism and tolerance.

Social tradition, acting upon the confirming-tendency, establishes useful solidarity. We couldn't hold the world together without it. It builds more strong and desirable structures than weak and questionable ones. Its constructive value is far reaching; and its enumeration in the group of impediments refers only to the dangers inherent in its unwise application. In both uses it illustrates the close alliance of feeling and thinking. When we call the influence by which movements and causes and beliefs and attitudes grow and decline "public opinion," we call attention to the thinking-factor; when we call it "public sentiment," we dwell upon the feeling factor. It is commonly a fusion of the two, and forms an indispensable psychological enforcement of progress. It is no less responsible for the obstacles in progression. It provides both the course and the hazards. Social

psychology, no less than individual psychology, must make terms with the interplay of feeling and thinking.

The enumeration stops here by limitation of space, rather than by completion of the analysis. Its composite issue is well expressed in the temperamental bias that sums up one's emotional predilections in the formation of attitudes and beliefs. Temperament, as well as natural rationality and acquired logicity, enters into the beliefs which we as persons hold and cherish and defend.

There thus result the more subtle deviations of belief from the straight and narrow path of proved convictions, through the intrusion of any and all of the orders of preference that derive from feeling. The summary by James contributes a classic phrase: "the scientific-academic mind and the feminine-mystical mind shy from each other's facts, just as they fly from each other's temper and spirit." And there are many other types of mind, of temperamental allegiances, that in complex patterns form the varieties of minds scientific and minds romantic, of minds theoretical and minds practical, of minds dogmatic and minds catholic and minds radically

rebellious, of minds imaginative and creative and minds liberal and conventional. They all more or less fail to understand one another's attitudes, fail to value one another's defenses, fail to appreciate one another's position. Each finds in the other an impediment to right thinking, and all exemplify the intrusions of predilection in judgment. It is in a world thus constituted, both in condition and disposition, that progress must make its way, despite the impediments of thought. The affective life has its just claims no less than the intellectual. Wisdom consists in the mutual adjustment of thinking and feeling.



**SOCIAL PSYCHOLOGY
AND HUMAN VALUES**

Floyd H. Allport

THE history of modern science is a tale of human ingenuity embarked upon two opposite but closely related quests. The first is the goal of understanding the laws of the universe, and the second, the manipulation of nature for human ends. Though dealing with the same natural materials, the attitude taken and the problems envisaged by the devotees of "pure" science are widely different from those of the applied scientist. To the latter, as to the man-in-the-street, the word "science" is likely to mean our present marvels of radio communication, aeroplane travel, machines to supplant human labor, and startling medical and surgical cures. The man in the laboratory, however, regards all these as the mere trappings of science. They are to him interesting conveniences; but they are pale and trivial in comparison with that majestic realm which, through his ceaseless toil, is slowly opening up to human understanding. Although possessing mighty opportunities for controlling natural processes and for making humanly useful predictions, the pure scientist rarely predicts or controls events

except for the purpose of extending his knowledge of their nature. The applied scientist, on the other hand — the industrial chemist, the engineer, the agriculturist, and the physician — are ceaselessly at work to perfect a technique of prediction and control. Depending for their cues upon the work of the pure, or disinterested, scientist, their attention is not upon the universe, but upon immediate human adjustment to nature, upon economic production, transportation of human goods, the safeguarding of health, and the multiplying of devices for material and cultural enjoyments.

At every level or class of natural objects we find this twofold adventure in progress. The physicist explores the properties of matter in its minutest organization, namely, the mass, magnitude, and motion of the hypothetical electron and the ether. His discoveries within these subtle media have led, through applied physics, to the marvellous uses of electric currents and the inventions of the X-ray and radio-telephony. Working with larger hypothetical units, such as atoms and molecules, the pure scientist has formulated laws of fluidity, crystallization, and the kinetic properties of gases. Such discoveries in turn have aided in the harnessing of waterfalls for human uses, the manufacture of strong building materials, and the development of internal and external combustion engines. The pure

scientist has studied the laws of combination of the atomic elements, with wonderful effect upon the practical phases of industrial and physiological chemistry. Upon a still more complex plane of nature we find the biologists, watching the behavior of the smallest living creatures, and exploring the laws of growth, movement, reproduction, and decay throughout the realm of plant and animal life. From these discoveries emerge new principles for the elimination of disease, and the invention of appropriate techniques by the bacteriologist, the agriculturist, and the pathologist. In this way even the lower organisms are brought within the ever-widening circle of control for human purposes.

It may appear to the casual observer that the recital of our scientific achievements is now complete. There seem to be no more realms to conquer. Such a conclusion, however, would be erroneous; for there is still another sphere through which human beings fulfill their needs and derive pleasure and satisfaction. This sphere consists of *other* human beings. Popular philosophizing tends to separate the universe into two great orders — man, and the rest of nature. We often personify the human race, and think of it as a single being whom we call Man. The progress of science is then thought to be concerned with the adaptation of this great “humanity” to the remainder of the natural order. When viewed

realistically, however, this struggle for adaptation is not that of a mystical "race," but of specific men and women. For each man, woman, and child, the world consists not only of minerals, plants, and animals, but also of *other persons*, and of the numerous buildings, tools, and cultural equipment which they have created. Dominion over the conditions that affect his life, means for the individual understanding and mastery not only of the lower orders of nature, but of human beings as well.

Let us first consider the process of getting what one wants through some of the simplest social contacts, namely, those exhibited by the lower animals. If two dogs, a large and a small one, are quarrelling over a bone, the smaller dog may be severely bitten and may run away, leaving the prize to the other. During the encounter, the larger dog may have bared his teeth and emitted loud snarls. According to the principle of conditioned response, not many repetitions of this experience should be required before the small dog will run away from food, in the presence of any larger dog, when that dog shows his teeth or growls. Furthermore, a normally intelligent larger dog will soon learn to use this kind of "social stimulus" as a means of intimidating any

intruder, thus safeguarding his own supply of food without the inconvenience of physical combat. The control of a fellow creature thus becomes a method for securing the satisfaction of the individual's biological needs.

The family circle also is a laboratory for the observation of social control. Babies learn to control their parents by cries and gestures which evoke responses based upon fundamental habits in the parent. The mastery of the adult environment becomes one of the strongest incentives of the child in learning to speak and, later, to read and write. Parents, on the other hand, dominate their children through fixating in them habits either of affectionate dependence or of fear. Wives control husbands through tears and the play upon habits of sympathy, through appeals to pride or other qualities possessed by their mates, or through sex appeal. Husbands control wives largely through the same means, though often by substituting fear of loss of economic support (food and protection) in place of a resort to sympathy. From a broader viewpoint we may observe how the entire pattern of personality in the child or the mate may be molded by living in continual contact with a dominant individual. In many cases, of course, family life is so organized as to fulfill the purposes of all its participants, and each attains through his contacts with others the fullest expression of his personality. But even in such cases fam-

ilial behavior may be truly regarded as a means of attaining the satisfactions we want through our intercourse with those about us.

Leaving the family group, we find a similar control exerted over attitudes and opinions in community-life. It is through the co-operation of others in civic enterprises that the individual is able economically to obtain his material and cultural satisfactions. The existence of a means for so educating, persuading, or controlling others as to secure such co-operation is a first essential of community-organization. Widespread social movements are based upon techniques for the creation of public opinion, that is, for the universal control of the attitudes of individuals. Campaigns to secure labor legislation, public health activities, the elimination of bad housing conditions, the regulation of the use of alcohol and drugs, the struggle for self expression in special interest groups, such as organized workmen, feminists, and religious fundamentalists — all these are examples of the universal tendency to achieve our goal through controlling the thinking, voting, and acting of others. Whether narrowly or broadly conceived, whether humanitarian or selfish, organization for concerted effort means acquiring power to influence human behavior both within and outside the movement concerned.

We use others also in the more standardized and

permanent relationships of life. By specialization and exchange of labor in the economic field, we satisfy our needs through others, while rendering service ourselves to their wants. In education we mold the habits of children, both in skill and general disposition, so that they will conform to the civilization of the older generation, to a system, that is, which now supplies our needs and affords us interesting occupations. Religious leadership is a means of securing behavior useful to other human beings, as well as satisfying to the individual himself, through the appeal of personal relationship to a deity. Government, or law, itself consists of a set of common habits in one's fellow men regarding persons and property, upon which the individual can rely, and through which he can command security in his day's occupations and his plans for the future. Broadly speaking, the technique and operation of all our institutions are but variations of the common theme — our habit of so using the objects of our environment (including human beings) as best to satisfy our needs and realize our possibilities.

Returning now to our distinction between pure and applied science, let us inquire what are the

sciences dealing with the study and control of human beings as a part of the environment. From the applied standpoint we may mention such studies as practical sociology, social ethics, the science of political organization, public administration, law, and applied economics. These disciplines, as pursued by many of their students, are normative. They comprise techniques for the invention of more useful patterns to be followed in the shaping and control of human behavior and the perfecting of our political, economic, and religious institutions. But may we not logically look for a corresponding *pure* science — one whose workers are concerned with human behavior not as a tool for attaining human purposes, but simply as a natural process, exhibiting like other phenomena that orderly sequence we call natural law? This science is to be found in modern psychology. Through an understanding of its principles those who would effectively control behavior for human ends may receive useful guidance.

Psychologists and social scientists thus merely continue our double quest for knowledge and power over nature, when, leaving the inorganic and biological realms, they enter the sphere of humanity itself. As we enter the social field, however, we find, in contrast with sub-human phenomena, one important difference. In dealing with minerals, plants, and

the lower animals, human beings with their purposes have stood at one end of the process and have adapted an entirely foreign set of materials to their needs. In the social field, however, men and women are not only the purposive agents, but also the tools through which the purposes are achieved. One man may seek through others a satisfaction of his own needs, and be at the same time an instrument for fulfilling the needs of others. The means and the ends of human welfare, always clearly distinguished in the inorganic and lower organic world, become hopelessly entangled in the human realm of psychology and the social sciences. It is not enough, therefore, to adopt a program of adjusting means to ends: we must study what happens to the purposes themselves, when the behavior of the individuals who possess them is used in part as a tool for fulfilling the purposes of others. The control of society over the individual is merely a metaphor. We find upon inspection only control by individuals. Power may be exerted in the "name" of society or the public good; but it is still exerted by individuals, not by the public. There is, therefore, nothing in the nature of social control to insure its exercise in a truly democratic way.

It is clear, then, that a broader and more critical approach than that of the applied social sciences is needed, if the purposes of all individuals, rather

than those merely of the administrator or social strategist, are to be realized. We must know not only the principles of human psychology and how they can be applied in regulating action, but also *the origin, process, and human significance of such regulation as is being exercised*. We must observe the drives or motives of the controlling agents, the stimuli (words, gestures, official acts) through which they control the behavior of others, the responses made by those controlled, and the effect of the whole process upon the needs, habits, and personalities of those concerned. We need a science which shows us the individual, not as isolated in the psychologist's laboratory, but as stimulating and responding to others — as influencing and being influenced by others in the give and take of daily life — a science, in other words, of social behavior.

Such a science is social psychology.

To make our meaning a little clearer, let us consider the following illustration. The other day, two of my children, a boy of eight and a girl of five, were taken by their grandmother to a "movie." The next day, as I sat writing in my study, my glance fell upon a neat row of boxes at the left of my desk,

bearing inscriptions in the handwriting of my small son. At the head of the row stood a piece of cardboard, upon which the initials "U.S.A." were printed conspicuously about ten times. The labels upon the boxes, evidently spelled out phonetically, read respectively, "guns," "cannonballs," "bullets," and "dangerous torpedoes." Upon lifting the covers, I found under them a quantity of paper rifles, nails, paper-clips, and other appropriate missiles. At the foot of the row was an aeroplane landing, constructed out of paper. As I came down to dinner, I was accosted by my little daughter, who, shaking her finger, took me to task as follows: "Daddy, the Germans are *too* terrible people. They *did* come over and try to steal our country. I saw them do it — so there!"

It is evident that there are here at work processes of social control which, if multiplied, as we may suppose they are, by approximately the number of boys and girls in the country, present gigantic possibilities. For it is of popular attitudes of this sort that wars are largely made. The psychology of the situation is vague, and is entangled with the purposes of the various persons responsible for it. To attempt a brief analysis, however, we may refer to a feeling of patriotism, which exists not only in children, but also in motion-picture producers, government officials, professional military men, *entrepreneurs*, and

in fact in the public generally. Patriotism is considered to be a noble and righteous feeling, the very spirit of America. Hence it is natural that we should desire to instill in our children a love of our national symbols, a belief in the righteousness of our national cause, and a hatred of the turpitude of our enemies. In all this, patriotism and patriotic teaching are assumed to be both the purpose of the controls exerted and the human values to be defended.

But there is another way to look at the matter. It is possible that there are other scarcely recognized objects to be achieved, purposes not of every human being in the situation, but only of certain ones. It is not unlikely, for example, that motion-picture directors and producers are looking for themes which will have the widest appeal, and will play upon the deep and universal emotions aroused by warlike situations. To give the people that which interests them is to control them in the direction of increasing ticket-office receipts. It is also possible that among leaders who use these passions for their war-time propaganda, motivation is not so simple as the naïve patriot might imagine. We have to consider not only the habit of professional militarists, who think of safeguarding "national interests" in terms of armies and navies, but also the foreign investments of capital which may constitute such national interests. Then, too, there are certain

nationalist-patriots who crave the feeling of power and moral exaltation that rise through an identification of one's self with the embattled righteousness of the nation. In so far as these possibilities are true, patriotic feeling *per se* is not the *true* purpose of nationalistic teaching, but only a disguise of more powerful motives lying beneath. To say that the "movie" director is expressing the patriotic purpose of the nation, may be merely to conceal the fact that he is using human beings who have such a purpose as tools for his personal advantage. Patriotism may thus be regarded not as an end, but as the means to an end.

The only solution of this tangle is to abstract one's self temporarily from the alleged "purpose of the nation" and watch the process with the detachment of a disinterested observer. As a social psychologist, I thrust to one side the strong emotional appeal of my country's symbols and my patriotic impulse to obey the "will of my country." I cease to be interested in psychology as a means of making my children loyal and patriotic. I am concerned only with the finding out just how and why my children have acquired their interest in warfare and their hatred of Germans. When I am in such a mood, certain significant and guiding questions come to my mind, questions that are very different from those asked by the defenders of national morale. Who,

I ask, were the persons directly or ultimately responsible for screening and exhibiting the picture that has so impressed my children, and what were their motives? Why should the scenes presented have taken such a hold upon childish fancy — upon what earlier experiences of childhood did they build? Why has this influence been more potent than my own parental example along anti-nationalistic lines? How long will it persist, and what is the likelihood of its being modified by a more critical attitude toward one's country? What is the probable effect of this influence upon the future personalities of my children? Will it cause them later to participate in cruel or thoughtless acts in the name of their country? How general is this condition among other children, and what are the social results?

We have selected nationalism merely as one field in which the approach of social psychology could be profitably followed. Nearly every piece of propaganda used in social movements presents similar problems. The members of the Ku Klux Klan have felt themselves imbued with the purpose of maintaining racial purity and freedom from foreign religious control within the United States. These motives, though possessed for many years before the organization of the modern Klan, were in the main dormant. But when Clarke and Tyler came upon the scene with an entirely different

set of purposes of their own, these millions of substantial citizens were pulled by clever manipulation into the ranks of a new crusade. *Their* purposes, which they thought were receiving entirely spontaneous expression, were being used for the ends of a select group of promoters and officials who knew the psychology of racial and religious prejudice and how it could be profitably applied. Here again, the task of the social psychologist is to survey the process as a whole, in the attempt to distinguish the means from the ends. Not only must he know that such widespread prejudices exist; he must study their origin and their operation. He must observe the technique of suggestion, the personalities of the organizers and leaders, the value of Klan membership to the self assertive cravings of the members, and the impression that the "Invisible Empire" is universal and therefore irresistible.

A few further examples may be briefly cited. The sensational newspaper editor knows his "psychology" well enough to be a good judge of potential news-value, whether the occasion be the transatlantic flight of a handsome aviator or the brutal murder of a child. For social psychology, however, he has little use; for this shows him the reverse side of his own technique. It exposes the psychology of his own motivation and his play upon the susceptibility of

people to what he represents as "public opinion." In the religious field, the ordinary human psychology, as practised by Aimee McPherson, enables her to bring many a sinner to repentance. But *social* psychology shows us Aimee McPherson as she is doing it. The labor agitator holds up to scorn the psychology of the mill owners, and exploits freely the habits of thinking and feeling which he knows so well among the workers. The capitalistic publicity-agents are quick to discover mental twists of the strikers, and to work upon the neutral public through insidious suggestions concerning the "reds." Each is an adept at the psychology of the other fellow, but cheerfully ignorant of his own. It is the business of the social psychologist, on the other hand, to point out motivation upon all sides of the conflict.

The situation in crowds and social movements is not different from the intimate, face-to-face contacts of social life. Within the home, ordinary parental efficiency consists, when the children are small, in knowing enough of their natures to subdue them and make them behave according to conventional standards. Some parents do this through dark

threats concerning bears, policemen, and doctors. Some, who think they are wiser, indulge and lavish affection upon a child in some directions, and then appeal to his "love" to gain control over him in others. Some decry all attempts to control their children, and adapt themselves, like the weaker dog, to the whims of the *enfant terrible*. A few, of course, appeal to reason, and try with greater or less success to build up habits of self control within the child. Social psychology in each case is concerned with the longer view. Its problem is not how to make children mind, but to discover what is happening day by day in their life habits as parents are making them mind. It inquires to what extent the purposes of one are being used as a means of gratification and convenience to the other, and what is the final result of giving up continually to the tyranny of the younger generation. In each instance the social psychologist's interest is somewhat different from the immediate concern of the average parent. Or, from another standpoint, the greatest success in parenthood may arise through detaching one's self occasionally from the *mêlée* of family life and becoming a social psychologist.

Not only the family, but other institutions also — the school, the State, the economic system, and the Church — are fields for the study of the processes of control. Here, however, it is more difficult to

determine who is actually the controlling agent. There seem to be invisible influences acting upon individuals, impelling them to behave in a uniform and conventional manner; so that one sometimes imagines there is a societal pattern, more enduring and powerful than human beings, that impresses itself upon them as if from without. Such a view, however, overlooks the important rôle of the educational process. It is in the social, civic, and religious instruction of the younger by the older generations that we must look for the origins of institutional control. In addition to the common branches and the science, lore, and handicrafts of his people, the school child receives careful discipline in respect toward the constituted authorities, the law and Constitution, and in lip service to the so-called "national ideals." Subservience to the divine authority of the ritual and the clergy is inculcated through the church-school. Within the family are developed common attitudes of honesty and conventional morality. Home, school, and playground, moreover, are places where the prevailing spirit of the national civilization is fostered — attitudes, for example, such as the Prussian or Fascist subordination of the individual to the State, the English tradition of individual liberty, or the American urge toward competitive business enterprise.

In pedagogy, as elsewhere, those concerned in

the direction of human behavior rely upon psychology, the science of human nature, for their most effective methods. The content of the teaching, however, as distinguished from the technique, is determined by the particular values of those who shape the curricula. And here the social psychologist enters, to observe how the student is controlled through the choice of stimuli, the selection of facts, theories, and viewpoints presented for his assimilation. Detached from the institutional objectives and the spirit of the times, the social psychologist watches the process as a whole. He sees the control of society over the individual through education only as a subtle form of the control of one individual over another, a control often exercised in blind ignorance of the direction in which we are going. His absorbing interest is to observe what happens to the individual when caught up in this network of custom and convention through which he is made to serve the purposes of everyone else.

Let us take, for example, the industrial and economic system. We have been trained by our culture and the attitudes of those about us from infancy to regard our technological era as the culmination of human civilization. Our watchword tends to be production and sales efficiency, rather than human values as expressed in work. Business-management

becomes the art of so controlling men as to bring their drives into alignment, rather than cross-purposes, with commercial objectives. The personnel psychologist must fit the individual into the scheme of specialized machine labor, rather than adapt the methods of production to the individual as a personality. Psychology is applied, not to human welfare, but to Business and Industry. The social psychologist, however, looks at the matter from a very different angle. For maintaining the standard output of factories and keeping up our high level of American prosperity, he has not the slightest concern. He is interested only in the motivation, technique of control, and human consequences of the industrial process. The large volume and high activity of business are not necessarily, as some of our national leaders would suppose, an indication of widespread prosperity in the fullest sense. The institution of "business" is often personified and considered as a being, having a purpose of its own, which is directly aligned with the purpose of national welfare. But this is a fallacious use of the term, one which serves only as a respectable camouflage. The purpose of "Business" is merely the purpose of *business men*. In spite of an apparent rise in the standard of American living, the social psychologist still sees business as a system in which certain individuals attain their satisfactions by man-

ipulating others, and by using the life purposes of others as a means of fulfilling their own.

A similar institutional fallacy pervades popular education and thinking respecting the Church. Loyal members are accustomed to "support their church" as a reality existing apart from themselves. They regard it also as a mentor of ethical standard and practice whose commandments they must obey or, at least, treat with verbal respect. Ecclesiastical officials, by playing upon the religious emotions, and sometimes the fears, of the people, strengthen and solidify the acceptance of the Church as a transcendental reality. Whether or not there is deliberate abuse of this tendency, it is certainly true that when parishioners believe in the Church as transcendent reality divinely established above their heads, the words of the clergyman will have more force and sanction than when it is considered merely as a habit which the parishioners have of meeting and worshipping together. While the institutional fallacy is thus a powerful instrument for clerical control, its power is, no doubt, seldom *consciously* exercised; and when it is used, it is not necessarily employed as a tool for selfish interests. Nevertheless, the social

psychologist is inclined to reject such unprecise expressions as the "purpose" or "mission" of the Church, and to substitute a statement of the specific individuals whose purposes are included by this phrase. For it is here possible, as in the case of nationalism, to use the alleged purpose of the institution to cover the action of a few strategic individuals. The real processes of control are thus concealed; for people believe that the controlling agency is not specific individuals, but some higher, metaphysical entity, such as Society, the Church, or the State. And since this higher being is supposed to be mysteriously endowed, either with the common human purpose or with divine wisdom, it is regarded as a safe regulator of human conduct.

In the political, as in the religious fields, the concern of the social psychologist is clear thinking about the nature of institutions themselves, and the concealment of controls and confusion of means with ends which are carried on in their name. The administrator and the jurist try continually to build up a popular respect for "Law" as a transcendent reality. Their aim, in part, is to foster a veneration of courts and high executives, and a morale for civic participation. For the social psychologist, however, there remains the task of discovering how such fictions as a super-human law, infallible courts, and sacrosanct presidents have come to be a part of the

social heritage. He must inquire what errors and abuses of power are sometimes committed under the cover of these doctrines. In every field of institutional behavior the social psychologist finds material for studying, from a disinterested standpoint, the processes of control over individuals. He is ever on the alert to observe not how human beings can best be adapted to serve human purposes, but what happens in the process through which such an adaptation takes place. When we speak of the interests of groups and institutions, whose interests are really being satisfied, whose purpose dictates the ends to be achieved, and whose behavior furnishes the means?

When once we grasp the problem of a pure science of social behavior, important and somewhat novel values appear. For through such a science we can illuminate the task of distinguishing means from ends in social living. Human beings, like plants and animals, are subject to use for the purposes of other human beings. But unlike the lower forms of life, they are capable of observing and understanding the processes by which they are used. And this

knowledge may eventually make a difference both in the nature of the controls employed and the degree to which individuals will submit to them. If the little dog who scurries off at the faintest growl of another dog could really understand something of how his emotions had been conditioned by such rumblings, he might be able to restrain his precipitate flight long enough to treat each case on its own merits. He might learn to distinguish the instances in which the bark is likely to be worse than the bite. We have found that this is true in emotional conflicts growing out of family life. At least one branch of modern psychiatry proceeds by getting the individual to look back objectively upon the early memories of his parents and associates, so as to understand the controls that have been built from infancy upon his natural impulses. To gain such a perspective is one of the first steps toward a re-education that will liberate the personality from its nesting-habits.

Within the field of popular suggestion the science of social behavior offers the same values. In many ways it is a counter-check or antidote to the use of psychology for practical social control. Thus, if psychology enables the sensational journalist and politician to capture attention and stampede audiences, *social* psychology, through its insight into the process, may help us to fortify ourselves against such appeals. Although there is growing up a pow-

erful psychology of advertising, we have also a *social* psychology of how to resist the advertiser. The writer has a witty friend who floors the high-powered salesman by analyzing with him the probable motives behind his arguments and commenting appreciatively upon his skillful use of psychological principles. Public discussions of the social psychology of nationalism and propaganda, carried on during a period of war hysteria, would go far toward the reduction of the warlike impulse. The very intolerance of such discussions in war time, as manifested by government officials and crowd leaders, is evidence of their devastating power against the propagandist.

In our institutional life, a popular interest in social psychology might lead toward a reconsideration of the ends toward which we seem to be striving. From the psychology of fitting workers to machines, or human behavior generally to the skyscraper and the traffic signal, we might turn to social psychology and inquire in whose interests all this machinery is operating. We might consider whether, for the purposes of individuals, such gigantic machine production and such confusion are necessary. We might even speculate a little upon what the worker's purposes would really be, could he be released from the domination of a commercial and technological age. Instead of inquiring how to use human motives

to increase profits, attention could be turned to the nature of the profit motive itself, and how its possession by some individuals is affecting the lives of others. Loud insistence upon respect for law and the solemnity of the courts might give way to studies of the psychology of judges and jurors, the efficacy of our penal methods, and the meaning of law in human life. Schools and colleges would not be merely places of apprenticeship for *entrepreneurs* and seekers of special advantage. Education would gradually come to mean the gaining of insight into human values and the understanding of contemporary forces in their bearing upon self realization. Social psychologists would thus join other agencies in opening the way for a continual challenge and criticism of our institutions.

“An ambitious program indeed!” the ultra-conservative thinker may retort. We are not, however, prophesying a millennium of popular intelligence, but merely stating a hope of what may be done if social psychology, like other pure sciences, can be put to the service of human welfare. The process must be slow. Negative criticism and exposure may clear the air for a new approach, but

they cannot of themselves build up a successful method of social living. The sudden shuffling off of one form of control, only to submit unthinkingly to another, will accomplish no good. Large portions, moreover, of our present institutional pattern may be of enduring value in the light of newer insights. The application of our knowledge must therefore be gradual, an adventure fraught with the vicissitudes of trial and error. A certain truth also must be accredited to Barnum's sage remark about the prediction of human beings for being deceived. But in spite of these qualifications, the faith of the social psychologist points toward a gradual increase of popular insight and a revival of individual purpose as the basis of the social order.

If, therefore, pursuing man's twofold quest of knowledge and its application, one should inquire the objective to which social psychology is to be applied, we would reply that its goal is the releasing of individual values from their unseen control by other individuals. The older psychology, dealing with human beings as reacting apart from their group, affords many principles by which we may direct action. But since it shows us no picture of social processes, it does not help us to understand or reflect upon the controls to which we are subjected. Hence there is no opportunity to acquire free moral responsibility and control over one's self. Insight into the psy-

chology of social relations, on the other hand, reveals the subtle processes through which one individual dominates others, and gives to each, so long as liberty does not extend to license, a greater freedom to arrange his life according to his own pattern. The potential service of social psychology, therefore, lies in its bestowal of power, not over human nature, but over the agencies that exercise power. It gives control over control.

An issue now emerges that is fundamental to our whole discussion and must be squarely faced. If insight into public opinion, family coercion, and all our institutions decreases the power exerted through these agencies, it decreases this power not only for evil, but also for good. And there are many who believe that this control, even such as is based upon popular credulity and lack of insight, is necessary for the maintenance of social order. A cry of atheism and anarchism is raised. Those who renounce their belief in government and deity are regarded as baser than those who commit unlawful or ungodly acts. Pope Pius XI, in a recent encyclical, has declared it a dangerous procedure to entrust to the masses of people the responsibility for their own moral and re-

ligious views. The institutions are often pictured by their high authorities as being something more than the attitudes and feelings of those who conform to them. They are thought to be the repositories of the righteousness and wisdom of the race, patterns worked out under divine guidance, through which Society is to mold and guide the individual.

To this view the social psychologist is vigorously opposed, on the ground that it fosters special privilege and is based upon ignorance and superstition. The common man may not know at all times just what is best for him. But in general, and touching all the needs of his personality, he is likely to know more about it than anyone else. The real truths and the more enduring values of life are simple, or can at least be stated in simple terms. Only error is persistently complex, and raises dilemmas which require generations of philosophers and theologians to solve. It seems unlikely, therefore, that a hegemony either of the true or the good is possible; and certainly those who have a stake in the maintenance of institutional power should not be the final arbiters of this important question. Just as the welfare of the State consists in the welfare of individuals, so the good which is *in* the State must be present in the acts of the citizens and not merely in the purposes of the rulers. The righteousness of the Church is not safeguarded by the purity of priests so much as by the virtuous

impulses of the worshippers. The task, therefore, of the social psychologist is to teach individuals to examine the ends for which they submit themselves to regulation. For the aims and ideals ascribed by officials to the family, or to business, industry, the Church, or the nation, he would have them substitute the purposes of actual men and women, purposes such as each sees expressed in himself and in those about him. In this way the ends of social regulation can be truly distinguished from the means, and human values brought down from "society" and restored to the individual. The control of man over nature, though an intelligible expression as applied to the lower sciences, becomes a fiction in the field of social relationships. For men are controlled not by Man in the abstract, but by men. And the full realization of human values is possible only when the individual places above such control the freedom of his own intellectual and moral judgment.



**MIND, MATTER AND
EVOLUTION**

E. A. Burtt

WE are all familiar with the little rhyme of
Stevenson that runs,

The world is so full of a number of things,
I am sure we should all be as happy as kings —

but its sentiment does not always find an echo. Sometimes the startling variety revealed in the world is a source of trouble rather than of satisfaction; things appear so bafflingly kaleidoscopic that we find ourselves quite unable to master them. Particularly is this apt to be the case when, moved by the urge of science or philosophy, we seek to explain some aspect of this variety that has hitherto withstood clear comprehension. For to explain is to reduce variety to unity; it is to discover some character pervading the entire complexity, in terms of which the unmanageable differences shall take on the form of an ordered system.

Now there are gulfs in reality which at first sight appear very deep. There is, to mention at once the most outstanding instance of such a gulf, the wide

cleft between the realm of mind and the realm of matter. How in the world shall we develop a mode of explanation that will bring these diverse areas of fact within a single intelligible picture? We popularly think of them as so mutually exclusive and ultimately incommensurable, that to many a really unifying comprehension seems quite hopeless, except in the rather meager theological manner of viewing both as created by and ultimately dependent upon God. Definitions of matter and mind have even been made in terms of their essential difference from each other, as in the old witticism, "What is matter? Never mind. — What is mind? No matter."

In this widespread assumption, however, of a fundamental gulf between mind and matter, there is a certain historical provincialism. I mean, we often fail to realize that this is an extreme view of the situation, characteristic of a rather brief period in the history of thought; and it will help our endeavor to transcend this dualistic cleavage of the world, if we examine first some of the historical reasons that led to the assumption.

The famous French mathematician and philosopher, Descartes, whose writings appeared in the

second quarter of the seventeenth century, is the fellow responsible for a good deal of the mischief. In the most persuasive manner, and one quite convincing to most of his influential contemporaries and successors, he divided the world after this dualistic fashion: matter was reducible to spatial extension and mobility, mind to thought, and between extension and mobility on the one hand and thought on the other there was nothing in common save their mutual dependence upon God. A thought is not extended, and has no intelligible relation to space; a bit of matter is not an idea, and has no intelligible relation to mind. But it is interesting to observe that Descartes could not carry out this extreme separation consistently. How is it that the motion of a material body gives rise to an idea, as when the fall of a stone on your foot produces consciousness of the event; and how is it that the purpose of raising my arm brings about a corresponding movement of the arm? In order to account for such facts, Descartes was forced to marry again the realms of reality which he had ruthlessly divorced, by selecting a particular portion of the brain in which material motions and immaterial ideas were brought together. The inconsistency of this procedure is palpable. While the mind "has no relation to extension, nor dimensions," yet it is "really joined to the whole body" and "exercises its functions" particularly in the pineal gland, "from

whence it radiates forth through all the remainder of the body by means of the animal spirits, nerves, and even the blood.”¹

Why was Descartes led to a doctrine of the mutual exclusion of mind and matter that he could not carry through consistently? The chief influences in this aspect of his thinking were two. In the first place, there was the predominant religious tendency in the late ancient and mediæval period to concentrate attention on the drama of the soul and its quest for salvation, which could be satisfied, it was supposed, quite apart from what happened in the external world. We think of St. Paul's vivid contrast between the spirit and the flesh, the latter pretty much the prey of the Devil, but destined to be left behind when we gain our promised immortality, in which the soul will continue to live freed from the trammels of matter. These interests and beliefs naturally led to a method of studying the inner life (and to some extent also the external world) in self enclosed terms; a psychology was built up assuming the independent reality of the one, and there were beginnings of a natural science in which the physical world was examined more impartially in its own terms. The second reason is to be found in the actual method of investigation which became characteristic of that natural science when, in the generation preceding Descartes'

¹ *Passions of the Soul*, Articles 30, 31.

philosophizing, it finally found itself and won its first startling conquests in the laws of dynamics established by Galileo. This method was that of mathematical analysis plus experimental verification, and the important thing about it for Descartes' result was that it seemed a method completely inapplicable to those happenings which had now come to be regarded as spiritual or mental. The physical world, apparently, could be successfully treated as a mathematical system, but the mental world was quite refractory to such analysis; it was a rapidly fluctuating, not exactly formulable complex of ideas of color, sound, and beauty, of feelings of pleasure, grief, and passionate love or hate, of purposes, ambitions, strivings. No wonder Descartes, who was moved by a tremendous zeal to further this mathematical conquest of matter, found it necessary to view mind as completely separate from matter; and no wonder that most of us, who are the immediate heirs of an age dominated more than anything else by the successes of physical science, have inherited this extreme separation as natural and congenial to our thinking.

I mention these historical matters the more fully because it is only in the present generation that a vantage point has been reached enabling us to see how lacking in ultimate cogency and necessity are the considerations which underlay this extreme separa-

tion of mind and matter. Descartes thought of matter as inherently extended in space, and his followers believed it composed of unitary lumps in the form of hard, extended atoms. Contemporary physical theory has abandoned this notion. For it, a piece of matter becomes an electromagnetic field, its component electrons having spatial relations with one another, of course, but being quite immaterial as measured by previous notions of what materiality means.

Moreover, the study of mind has also in our day taken a novel turn, which has lessened the gap from the other side. The behaviorist thinks of mind as an affair of organic behavior, it is what an individual overtly does as he responds to this or that stimulus in his environment. Now such overt doings are physical movements. They are experimentally analyzable and to a considerable extent mathematically measurable, in the same manner, essentially, as the things the physical scientist studies. Further, even from other points of view in psychology than that of the behaviorist, such as the Freudian, greater emphasis than formerly is laid on the physical conditions of mental processes, which means that for the practical purpose of control we have to regard them as indissolubly allied to material changes. This transformation has of course been aided by the increasing tendency in modern times to admit the legitimacy of other human interests than that of religion, which

has encouraged a study of mind untrammelled by those motives that in mediæval days enforced its separation from the wicked world of matter. From both directions, in short, the mind-matter dualism that most of us have inherited has been broken down, and the attempt to unify in comprehension a world including both these types of entity has become somewhat more hopeful and taken on new form.

But if we examine certain problems of present philosophy, we shall be apt to conclude that this bridging of the gap between mind and matter has not accomplished much metaphysically; for it has served to bring into clear relief another cleft in the universe that seems to be just as deep and equally puzzling.

Suppose we consider the tremendous difference that seems to obtain between what we call a mechanical process and a process of evaluation — in simpler terms, between mechanism and purpose. Both these types of activity appear to occupy a real place in the universe. Exact science, whether it thinks in terms of atoms or of an electric field, reduces the behavior of its objects to mechanical law. This means, in the most general sense of the phrase, that they are thought

of as externally necessitated to act as they do; it is a matter of fatalistic performance, in which such terms as "good" or "bad" have no proper place. And it is just the world of physical matter, for the most part, that we seem compelled to identify with the world of mechanism in this sense. But when we look at mental processes, particularly the more active and vivid of them, we discover something more than mechanism. The latter is there, of course, in the form of dependable habit; and it has been said that habit controls nine-tenths of our behavior. But in those acts that rise to clear consciousness the routine of habit is transcended; we find ourselves comparing the alternative which habit would enforce with other alternatives, and selecting the one which in the light of the comparison we desire. It is a process of distinguishing the better from the worse — in short, an evaluation — and the alternatives considered seem clearly related as comparative values, not merely by mechanical push and pull.

Shall we finish reading this chapter, or turn the pages to something more interesting? Once these alternatives are suggested, each of us will find them related as values; a conscious selection of the better from the worse is going on, and we can no more avoid considering them in this purposive light than we can avoid falling to the ground if we happen to topple out of the window. If the situation were

adequately describable in mechanical terms, we should find no need to introduce the terms "good" and "bad," or their comparatives; we should simply observe ourselves following one of the two courses of action, without raising the question which of them is better. The fact that something fundamental seems omitted if we fail to include this aspect of the situation, testifies to the very important difference between a mechanical event and an evaluation. And it should be further noted that this reality of purpose is not a mere subjective matter of introspective analysis. The psychologist and the sociologist, in their endeavor to describe fairly certain forms of human activity that seem obviously to fall within their province, find it almost impossible to do so without admitting the reality of valuation — if not in the form of conscious purpose, at least in the form of selectivity of behavior due to the presence of competing wants or motives. The historian, indeed, would be hard-pressed to make intelligible the great changes that have come about in human institutional life, if he were not permitted to suppose that these changes were by some vigorous individuals preferred to the already existing alternatives — that in large part they came about because they were valued as better. Did the desire for national unity have nothing to do with the Italian war with Austria three-quarters of a century ago, or the preference of economic stability

to chaotic insecurity with the adoption of the American constitution?

But if mechanism and value are both real, we face one of the most baffling difficulties in the history of thought when we ask in what way they are to be brought within the same coherent picture.

Now in the history of thought prior to our own generation, there have been only two influential methods of trying to solve this difficulty and both of them are now antiquated. One is to include mechanism within purpose, and is known in technical metaphysical terms as an idealistic conception of the world; the other is to reduce purpose to a form of mechanism, a view that has generally gone by the name of materialism.

The form in which what I have called the idealistic answer is most popularly familiar in our Western world is that of traditional Christian theology. According to that hoary and appealing scheme, everything that happens in nature or the drama of human history is ultimately due to, or at least controlled by, a conscious and therefore purposive divine being. God, thus conceived as a mind like our minds, except that it is vastly greater and more perfect, has en-

joyed eternal existence prior to the order of things that make up our present world. The realm of mechanism which we empirically find around us was chosen by Him from out of an infinity of other possibilities, came into being at His command, and will pass away into something else whenever He chooses to terminate its career. In short, this theology is a particular way of saying that the world of mechanism has reality only within and under the dominance of an encompassing-process of conscious evaluation, that in the last analysis we can mean by mechanism simply an orderly system of means for the fulfilment of purpose. All idealism in philosophy, modern as well as ancient, has pursued in general this type of answer to the problem.

The materialistic answer, which has had considerable currency in the modern world, attempts to conceive the entire universe as a mechanical system, in which everything that happens is externally determined and related by the same ineluctable necessity that is present in the motion of a billiard ball under impact. From this point of view, the experience of purposive selection is to a certain extent illusory. There are always determinate causes for everything that human beings do, just as for everything that a falling stone will do; and it is simply our ignorance of these causes that leads us to suppose that a purposive choice is anything more than a mechanical

process. Evaluation, in brief, is reduced to a form of mechanism, and is regarded as possessing no reality that cannot be mechanically expressed.

What proved to be the fundamental difficulties in these idealistic and materialistic answers to the problem of explaining a world containing both mechanism and value? Curiously enough, the basic difficulty in the case of both of them is the same. Let us express it in general terms by saying that both these answers assume a point of reference in their explanations that it is impossible for us actually to maintain. Accordingly, it has been felt increasingly necessary in recent thinking to seek a different type of explanation, whose assumptions could be more consistently maintained.

Take first the case of materialism. When studied honestly in its own terms, a bit of evaluation presents itself as different from a mechanical push and pull; we are put off by being told that if we knew all the determining conditions of our choice, this difference would vanish. But as a matter of fact, in no given case of purposive selection are we able to know all these conditions; if we did, we could pick the necessary alternative at once without needing to weigh it against other possibilities. There would be no sense in weighing values, if we knew that one alternative was quite inevitable. In other words, materialism bids us take a point of reference for the expla-

nation of purposive situations that in fact we cannot take. Forced to do the best we can in a state of partial ignorance, we are asked to explain our activity as though the ignorance were not there. Not being able to know the conditions that are supposed to account for our behavior, we are asked to assume that we do know them, and know them to be of a definite kind, namely mechanical. We can hardly be fully or continuously persuaded by such logic. To put it still more paradoxically, although the experience of evaluation factually reveals itself to be more than mechanism, we are told that if we could look at it in some other manner than the factual experience compels, it would become mere mechanism.

Now it is the same difficulty, though with a changed set of concepts, that we meet when we critically examine the idealistic answer. In terms of our actual human experience, why does it take time to formulate a clear purpose and carry it through to fulfillment? Is it not because the facts which we have to understand in order to see what purpose they might be made to further, and whose nature must be respected when they serve as means for its fulfillment, are in some sense external to that purpose? They are given to it, rather than wholly determined by it; they interpose a certain resistance to its attainment. If this were not the case, the purpose would attain itself at once, with no temporal process

involved. In short, as factually revealed to us in experience, as temporal strivings towards their ends, purposes do not create their own mechanism. They use what is independently given to achieve something not given; but the real independence of the former is implied by the fact that the achievement is a process, and not an instantaneous realization. But if this is the case, it is obvious that to explain the world by saying that ultimately, in God's experience, purpose creates and fully controls the realm of mechanism, is again equivalent to a demand that we interpret from a point of reference other than that to which our experience forces us. We are not God, and cannot fully take a divine point of view, involving a supposedly timeless purpose eternally realizing itself through a mechanism interposing no resistance to its power. Our own purposes are different — temporal.

We must explain our world, if we find it possible to do so at all, from the point of view in which we actually find ourselves, not from some other. And the criticisms just ventured of these traditional answers to the problem reveal the aspect of that point of view which most needs to be insisted upon, if we are to reach a more adequate answer, and indicate why it is that in our day the conception of evolution has come to the front as a more hopeful mode of approach. The difficulty with materialism was that

it assumed complete knowledge about a certain kind of situation, whereas in fact we are only in process of getting such knowledge, and at no time is it fully attained. The difficulty with idealism was that it assumed as ultimate a timeless purpose, whereas experience reveals every purpose as a temporal process. As actually revealed, in other words, the world of our experience is a process, not a finished thing, whereas in these traditional cosmologies there was a tacit assumption that it is complete. Our experience of it was supposed to require completion through time, but not the world itself.

By applying the concept of evolution as an ultimate description of the world, contemporary thinking certifies itself as accepting the notion that reality is in itself a process. The application of the idea systematically to the solution of cosmological problems has been bringing about the most radical transformation of thought that has happened since the first brilliant epoch of scientific and philosophical speculation among the Greeks. To think of the world in terms of evolution means to think of it as a constant creation of novelty, and therefore never fixed or final in any of its possible manifestations.

The keenest minds today are only beginning to glimpse the revolution that this is bound to bring about in all our ways of thinking — on religion, ethics, art, metaphysics, as well as in the several branches of science. As an idea to be played with by philosophers, the notion has had a very hoary history, going back to the time of the Greeks; as a concept to be applied in a definite, verifiable way to the solution of otherwise baffling problems, its influence, as everyone knows, is a matter of little more than half a century, the decisive date being that of the appearance of Darwin's *Origin of Species* in 1859.

It would be an enticing theme to consider the precise way in which this conception of evolution has shown its fruitfulness in the major branches of scientific inquiry. Interestingly enough, it has gained some of its greatest conquests in the sciences of the inorganic world, to which originally no one had intended to apply it. In astronomy, the growth of a solar system or the development of a crystal has been enormously illumined by their treatment as an evolutionary process — in some sense in their temporal changes these entities behave like organisms — and the line between the living and the non-living has come to seem much less sharp. In the study of organic life, the theory of evolution has become so basic that it is only by means of it that the vast array of detail now in the possession of the biological sciences can be held together in a coherent system.

Every hypothesis that promises further fruitful advance presupposes the general evolutionary notion of life as a process of selective modification, made possible by variation, and controlled by the pressure of environing conditions. How far the conception is adequate in dealing with problems in psychology and sociology, is much in dispute; but that it has been of great value in illuminating some questions in these fields is certain.

But the present author cannot claim competence to discuss these applications. It has been rather the purpose of the present essay to enlarge our general historical orientation, so that we may appreciate why it is that pre-evolutionary modes of dealing with cosmological problems became inadequate, and at what essential points the idea of evolution, as applying to the universe as a whole and in all its parts, gave large promise, already considerably fulfilled, of remedying this inadequacy.

Let us return to the problem of mechanism and purpose, and see in what form contemporary discussions under the guidance of the evolutionary concept are attempting to deal with it, and how successful they seem to be. With particular reference to the relation between entities of this sort, the term

"evolution" has in our day come to be modified by the adjective "emergent": the focus of philosophical debate is the question of the validity of the conception of emergent evolution. The phrase itself is used as the title of Professor Lloyd Morgan's Gifford Lectures five years ago; the essential *motif* was central in Professor Alexander's massive work on *Space, Time, and Deity* four years earlier; and in more recent times relevant discussions have multiplied. Just what basic assumptions is the phrase meant to connote?

There are, in the main, three such basic assumptions, which we may express by the terms (1) continuity, (2) novelty, and (3) levels.

By "continuity" I mean the assumption that a later stage in an evolutionary process is separated by no break from the earlier stages, that is, that the laws that express the behavior of entities at an earlier stage still hold good at the later stages. For example, living things are supposed from this point of view to have emerged from non-living things, but a living organism is not a completely different thing from a stone. It is composed of molecules like the latter, which still obey in it the general laws of molecular structure and behavior. There is in it something else, to be sure, but there is no complete break with the nature of the inorganic.

By "novelty" is meant the assumption that as we

follow the process from its earlier to its later stages we discover at certain points a definite increase in complexity, such that the entities thus emerging can no longer be exhaustively described by the simpler laws which adequately described the behavior of the elements that entered into the complexity. The more complex fact, that is, reveals immediate qualities and modes of relatedness to other facts that were not present in the simpler behavior of the elements before they came together to constitute the complexity in question. Thus a living organism enters into relations with its environment and with other organisms that an inorganic object does not enter. It eats portions of it as food. It also presents qualities that cannot be located in a non-living thing, such as its active flexibility of adaptation, by which it seeks to preserve its equilibrium under the stress of changes in surrounding conditions. The process, in short, is one of the creation of novelty, as well as of the maintenance of continuity with the past; and the novelty takes the definite form of the appearance of more complex entities, with qualities and relations transcending those predictable in terms of the simpler conditions out of which they have emerged.

By the conception of "levels" it is meant to indicate the fact that this emergence of novelty is not a chaotic, hit-or-miss affair, merely branching out at random in all manner of ways, but presents itself in

a series of distinguishable steps, sufficiently set off from one another in their important characters so that a science occupying itself with a given one of them may mark out a fairly definite border line between its own field and that of other sciences. The universal process, in brief, stratifies itself into a system of levels, varying fundamentally in their degree of complexity. Organic life, for example, constitutes a level higher than that of inorganic matter; and though the line of demarcation between the two be not perfectly clear, it is at least clear enough for students of biology to experience no difficulty ordinarily in determining whether a given entity belongs to their field or not. Recent discussions of emergent evolution have revealed considerable differences of opinion as to how many levels can be definitely distinguished; but at least there is general agreement that the three outstanding levels of matter, life, and mind should be recognized as distinct, and as together forming the major stratification of the entire evolutionary process. Life is conceived to be an emergent complexity, arising out of pre-existent matter. Likewise, mind represents an emergence out of pre-existent organic behavior of a simpler type. The bearing of this on the problem with which we began, that of devising a coherent statement of the world that shall include mind and matter within the same picture, is now apparent. We see that this type of answer differs fundamentally from those popular

earlier in the history of thought. The attempt to swallow either mind or matter within the other is abandoned in favor of the attempt to locate both in a more inclusive process that determines the manner and order of their appearance, their genetic relationship.

Professor Alexander's statement of what is involved in these principles is so brief and well-put that I quote him here. "But as in the course of time new complexity of motions comes into existence," he says, "a new quality emerges, that is, a new complex possesses as a matter of observed empirical fact a new or emergent quality. The case which we are using as a clue is the emergence of the quality of consciousness from a lower level of complexity which is vital. The emergence of a new quality from any level of existence means that at that level there comes into being a certain constellation or collocation of the motions belonging to that level, and possessing the quality appropriate to it, and this collocation possesses a new quality distinctive of the higher complex. The quality and the constellation to which it belongs are at once new and expressible without residue in terms of the processes proper to the level from which they emerge; just as mind is a new quality distinct from life, with its own peculiar methods of behavior, for the reason already made clear that the complex collocation which has mind, though itself vital, is determined by the order of its

vital complexity, and is therefore not *merely* vital but *also* vital. If, to borrow the language of Mr. Lloyd Morgan, with whom on this matter I believe myself to be in general agreement, . . . the processes of a particular level are represented as *a* processes, a constellation of such processes is of such a kind as to be a new process, *ab*, with its quality B. That is, the thing which is based on that constellation of *a* processes has an emergent quality B, whose behavior consists in *ab* processes; and though *ab* processes are also *a* processes, they are not merely such, and are on a different level from the processes which are sufficiently distinguished from other forms of existence as being merely *a* processes.”² Professor Alexander would illustrate this, for example, by the fact that while mental happenings are also vital happenings, which conform as such to the general laws of organic behavior, they are more than physiological; an exhaustive statement of them will have to include terms and relations that do not appear in a statement of the general laws of organic behavior.

It would transcend our limits to discuss in any detail the way in which this doctrine of emergent

² *Space, Time, and Deity*, vol. II, p. 45 f.

evolution has been developed by its different influential champions. It is more important, perhaps, that we see something of the difficulty that those who pursue this line of attack find themselves compelled to face, and how it is dealt with in the philosophy of nature which just now is arousing most interest in the English speaking world — that of Professor Whitehead of Harvard.

The most serious difficulty may be stated as follows. If we suppose consistently that there was really nothing in existence at all during the earlier epochs of time, save inorganic motions, going through nothing but mechanically predictable transformations, then the appearance of such emergent entities as life and mind becomes a sheer miracle. We may accept their actual presence as a hard fact, but it seems quite inexplicable, the sudden coming-into-being of a reality for whose genesis we can discover no rhyme or reason. And our rational curiosity finds little satisfaction in such an outcome, for by its very nature it seeks a comprehensive system in terms of which we can see why whatever appears must have presented itself in the way in which it empirically has. Accordingly, in the interest of rational explanation itself, we seem forced to suppose that in some sense these complex emergent characters possess effective reality from the start, and by their influence on the processes of the lower levels bring about the

appearance of observable entities embodying them. This means that the very highest form of purposive consciousness must be regarded as eternally in existence, striving to secure its empirical realization in the world of events.

But if we follow this train of thought to its logical conclusion, we have fallen back to the old fashioned idealistic view of the world. We have abandoned the essential principle of emergent evolution, at least to the extent of rejecting the empirical faithfulness that is one of the chief recommendations of the conception. For the empirical facts as revealed by the different sciences show stages in the process when there is no evidence for the reality of the higher qualities at all; and if we insist that they must be there in some effective form, we seem to be surrendering the testimony of verifiable fact for empty speculation. The way in which most recent speculations treat this difficulty may be pronounced a rather half-hearted compromise, appearing to bridge the gap, if they do so appear, simply because of vagueness instead of precision. This way is to postulate, even at the lowest stages, an effective push, or drive, or nisus toward the higher qualities, so that, for example, the age of matter must be thought of as not merely an age of sheer mechanism, but as mechanism somehow working toward life, consciousness, and divinity. In just what form these higher qualities

exist to be worked toward, and what part they play in their own progressive embodiment, are questions more often side stepped than frankly raised.

As between these two alternatives, Whitehead clearly prefers to run the risk of idealism, rather than that of appealing to miracles. But the significance of his philosophy cannot be fully appreciated until it is realized that he is really trying to mold our thinking into a novel channel, so that we shall more consistently place ourselves in a definitely evolutionary point of view and give meaning to all our concepts in the light of the hypothesis of nature as a creative advance, instead of continuing to think about these problems in meanings derived from the old antithesis of idealism versus materialism. When, therefore, he carries concepts derived from the higher qualities into his analysis of what is happening at the lower levels, it is well to see if he is not trying to infuse in them a somewhat more comprehensive and dynamic meaning than we should suppose if we did not bear in mind this possibility.

The unit of empirical reality for Whitehead is the event, which is any actual happening, from the almost instantaneous flash of an electric charge to the life-history of a constellation. Events may, of course, be very simple under analysis, or they may be very complex. Now every event gains its unity and quality through being an occurrence in the life history of

some organism; and conversely an organism means any grouping of events such as reveals a characteristic order or pattern, continually maintained under environing changes, that is, any whole controlling the behavior of its parts. It is evident that, in this use of the term, an atom, an electron, and a crystal are organisms as well as an amœba, a horse, or a conscious mind. From the standpoint of temporal duration, the chief characteristic of an organism is that its pattern of behavior takes time to display itself; it cannot be revealed in an instant. This is true of an atom as well as of a pine tree; for just as the pine tree goes through a historical development without which its nature as a pine is not expressed, so an atom is the field of the play of electric energy, whose pattern takes time for its repetition. Now why is it, ultimately, that anything happens in the life of an organism that would make it possible for a higher level of activity to emerge out of a lower? For Whitehead does not doubt that there are distinguishable levels of reality that such terms as "matter," "life," and "mind" attempt to denote.

The answer to this is that no event is a mere repetition of something that has happened before. As occurring in the experience of some organism, it is always the realization of a value, it is the grouping of certain data into a unity in a process of concrescence, which is determined not merely by the data, but also by an underlying creative search for value,

which expresses itself in the unification in question. In other words, for Whitehead, value and the activity of valuation are not confined to the higher levels of behavior, but play their part in the determination of every event. Moreover, if we ask what it is that is always the attracting value at every level of activity, Whitehead answers in terms of feeling; it is a greater fullness of feeling that is sought in every organic act. At the level of the simplest material changes, this lure of feeling is very vague and weak. Not only does it not rise to clear consciousness; no quality is clearly envisioned beyond what is already there for prehension. Accordingly, little more is accomplished than an endless repetition of external mirroring of the given. Pushed to the limit, this repetitious unoriginality would become the mechanical fatalism of old fashioned physical theory; but in this extreme form it is characteristic of no actual happening. If it were, the more vivid exploratory concrescences that happen in a conscious decision would be quite impossible to understand. The fact that we study electrons and atoms in large aggregates only, enables us to neglect the element of indeterminateness in each individual; our so-called exact laws represent really the statistical averages reached by dealing with these aggregates, and we must not at all suppose that they are obeyed to the letter by the individual atom or electron.

Whitehead thus envisions the evolutionary process

that constitutes the universe as the continual self-realization of numberless organisms, bound together in space-time as their basic relationship, ever pursuing the value of fullness of feeling which is found by synthesizing a field of data into an ordered unity, whose intrinsic quality, viewed from the inside, is a satisfaction unique and inexpressible. At the lowest level, this self realization appears to be a mere lifeless registering in the behavior of one unit of what transpires in all similar related units; at the highest level, it is the self conscious poising of possibilities of value for purposive selection that is the characteristic activity of reflective mind. But as involving an element of valuation, and of feeling, as well as that of definite data determinately conditioned, both are fundamentally alike. Such characters as these are characters of any process as such; mind and matter thus understood are not metaphysically separate substances, but factors that function in every event occurring at every level.

How satisfactory this mode of approach will prove, as questions arising in science and philosophy are more fully probed in the light of it, is yet to be seen. The one thing that is certain is that we have moved into new realms of philosophical discussion, in which progress can be made only as we are willing to shake ourselves free from the trammels of traditional conceptions.

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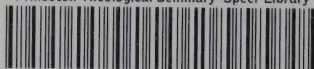
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